Summit WM20 Getting Started Guide

Software Version 4.2

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About this Guide

The purpose of the Getting Started Guide is to assist you in deploying the Summit WM Wireless LAN (WLAN) solution by mapping preparation, installation, and configuration tasks into a logical and efficient flow.

You can use this guide independently of other documents. However, if you are looking for detailed information on any aspect of the system's installation, configuration, or management, use this guide in conjunction with the *Summit WM20 User Guide*.

This guide is based on the following product families:

- Summit WM20 Controller

Who should use this guide

This guide is written for the users of Summit WM Wireless LAN (WLAN) Solution.You must be familiar with computer networking concepts to use this guide.

What is in this guide

This contents in this guide are organized under the following chapters:

- "About this Guide" describes the purpose, the target audience and the architecture of this guide.
- Chapter 1, "Summit WM Controller, Access Points and Software system" captures the essential concepts of the solution.
- Chapter 2, "Summit WM Controller configuration" explains how to configure the Summit WM Controller's settings in order to make it operational.
- Chapter 3, "Physical ports configuration" describes how to configure the Summit WM Controller's physical ports.
- Chapter 4, "Routing configuration" explains how to configure the static and OSPF routings on the Summit WM Controller's physical ports.
- Chapter 5, "Configuring DHCP, DNS and IAS services" describes how to configure DHCP, DNS and IAS services on Windows 2003 Server. In addition, the chapter explains how to configure DHCP service on a Linux-based server.
- Chapter 6, "Wireless AP's configuration" explains how to configure and manage the Wireless APs through the Summit WM Controller.
- Chapter 7, "WM-AD configuration" describes how to create and configure WM-AD via the Summit WM Controller.
- Chapter 8, "Availability configuration" explains how to configure availability features via the Summit WM Controller.

Formatting conventions

The document uses the following formatting conventions to make it easier to find information and follow procedures:

- Bold text is used to identify components of the management interface, such as menu items and section of pages, as well as the names of buttons and text boxes.
  - For example: Click **Logout**.
- Monospace font is used in code examples and to indicate text that you type.
  - For example: Type `https://<WM-address>[:mgmt-port>]`
- The following symbols are used to draw your attention to additional information:

NOTE

Notes identify useful information that is not essential, such as reminders, tips, or other ways to perform a task.

CAUTION

Cautionary notes identify essential information, which if ignored can adversely affect the operation of your equipment or software.

WARNING!

Warning notes identify essential information, which if ignored can lead to personal injury or harm.

Documentation feedback

If you have any problems using this document, please contact your next level of support:

- Customers should contact the Extreme Networks Technical Assistance Center.

When you call, please have the following information ready. This will help us to identify the document that you are referring to.

- Title: Summit WM20 Getting Started Guide, Software Version 4.2
- Part Number: 120411-00 Rev 01

1 Summit WM Controller, Access Points and Software system

This chapter describes the essential concepts of Summit WM Controller, Access Points and Software system.

The topics in this chapter are organized as follows:

- "Conceptual model" on page 7
- "Collecting information for installation" on page 16

Conceptual model

The Summit WM Controller, Access Points and Software system is an enterprise WLAN solution that consists of the following components:

- Summit WM Controller (WM)
- Wireless AP
- Summit WM Controller, Access Points and Software system

Summit WM Controller

The Summit WM Controller is a high-performance server that provides several functions, including centralized management and configuration of Wireless APs, user authentication, and advanced radio frequency management.

The Summit WM Controller is driven by Summit WM Controller, Access Points and Software system. The software resides on the Summit WM Controller and provides an intuitive web-based interface — Summit WM Graphical User Interface (GUI)— to enable you to manage the entire wireless network from a wired laptop, or a PC connected to the network. A command line interface is also available to manage the wireless network.

The Summit WM Controller is a full-functioning dynamic router that aggregates and coordinates all Wireless APs and manages client devices.

Some key features of the Summit WM Controller are provided in the following sections:

Web-based centralized management of Wireless APs

The Summit WM Controller enables you to monitor and manage Wireless APs from a centralized web-based interface called the Summit WM GUI. You can separately configure, enable, or disable each Wireless AP from the Summit WM Controller using the Summit WM GUI.

The Summit WM GUI also allows you to group the APs of similar attributes into one of ten upgrade profiles for the purpose of deploying software upgrades.You can initiate the software updates on a profile and the updates will be deployed to each AP in the profile. This saves you from the cumbersome task of deploying the updates to each AP individually.

Virtualized user segmentation

The Summit WM Controller allows you to create and manage unique WM Access Domain Services (WM-AD) that enables you to group specific mobile users, devices and applications on the basis of policy class in order to provide unique levels of service, access permissions, encryption, and device authorization.

A WM-AD segment is a virtual network and each Wireless Access Points can support multiple WM-AD segments.

WM-AD optimizes the dynamic nature of WLAN mobility as WM-AD groups can follow users without depending on the physical configuration of the network.

The following is the list of Summit WM Controllers and the number of WM-ADs they can support.

- Summit WM20 Controller: 8 WM-ADs

Authentication and encryption

The Summit WM Controller and Wireless AP work together to support comprehensive authentication, encryption, and intrusion detection capabilities. A range of robust security features based upon the 802.11 and WPA2 standards ensure that your network stays protected.

802.1X mechanism in conjunction with RADIUS and pre-shared key authentication ensure that only authorized users can access the network.

Other features include Captive Portal for redirected web-based authentication.

Intrusion detection

The Summit WM Controller allows you to configure Wireless APs to detect rogue access points on the network by scanning the radio frequency (RF) space at specific intervals. Scan results are then forwarded to the Summit WM Controller; the Summit WM Controller processes and presents the data centrally. Rogue detection data can be viewed via the Summit WM GUI.

Automatic assignment of IP addresses to the client devices

The Summit WM Controller has built-in DHCP server that assigns IP addresses to the client devices. The Summit WM Controller is also capable of working with an external DHCP server.

Web authentication

The Summit WM Controller has a built-in Captive Portal capability that allows Web authentication (Web redirection) to take place. The Summit WM Controller is also capable of working with external Captive Portal.

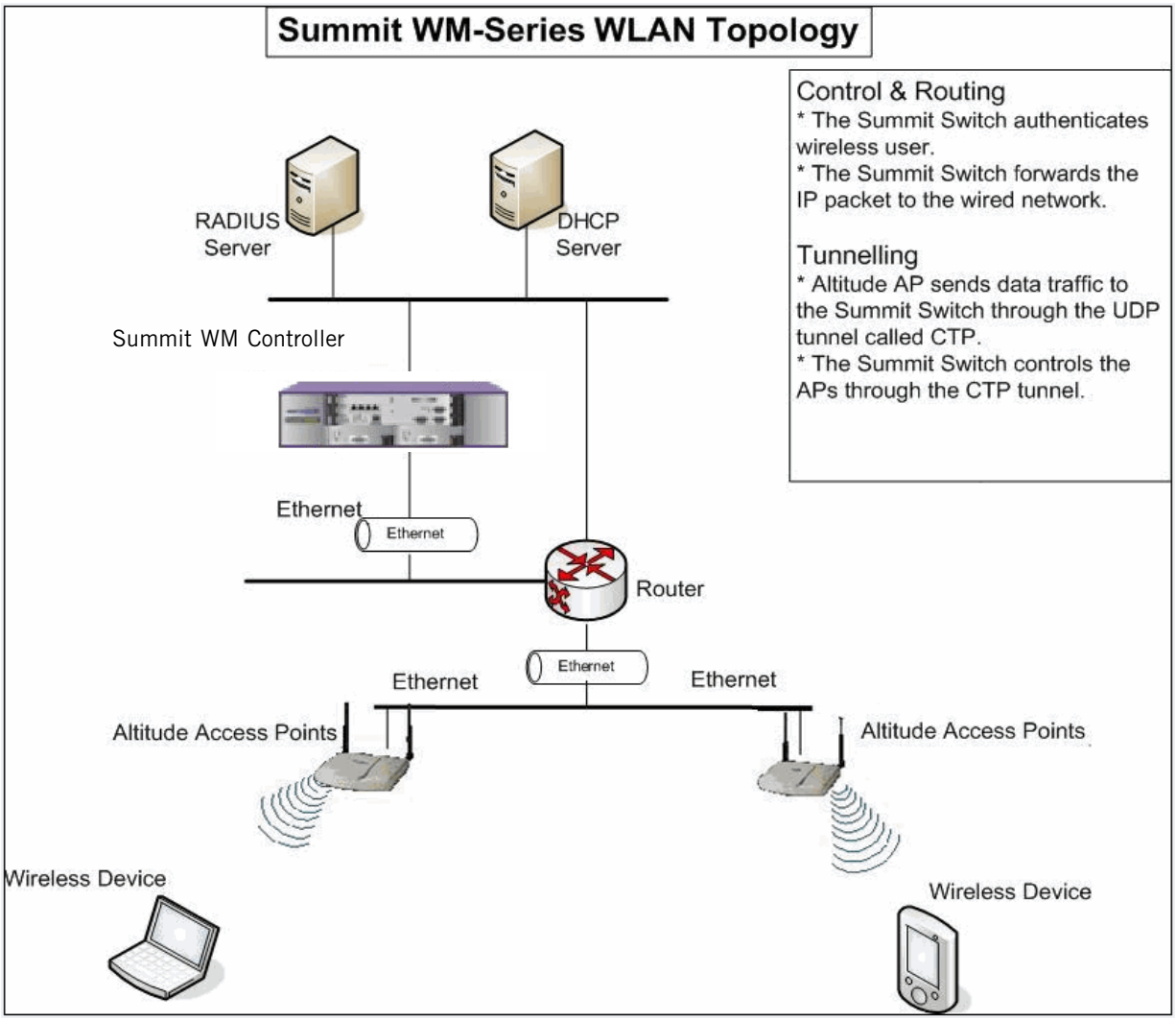
Wireless AP

Wireless APs are wireless LAN access points that bridge the network traffic between wireless devices and the Ethernet LAN.

Summit WM Controller, Access Points and Software system topology and network elements

The following figure illustrates a typical configuration with a single Summit WM Controller and two Wireless APs, each supporting a wireless device. A RADIUS server on the network provides user authentication, and a DHCP server assigns IP addresses to the Wireless APs. Network inter-connectivity is provided by the infrastructure routing and switching devices.

Figure 1: Summit WM Wireless LAN topology



The Summit WM Controller supports the following network elements.

- **RADIUS Server (Remote Access Dial-in User Service) –** An authentication server that assigns and manages ID and Password protection throughout the network. The RADIUS server system can be set-up for certain standard attributes such as filter ID, and for the vendor specific attributes (VSAs). The Summit WM Controller supports external RADIUS server.
- **DHCP Server (Dynamic Host Configuration Protocol) –** A server that assigns the IP addresses, gateways, and subnet masks dynamically. The external DHCP server depicted in Figure 2-1 is primarily utilized to provide addresses to infrastructure equipment such as APs. The IP addresses to the mobile devices are provided by the built-in DHCP server of Summit WM Controller. You can also configure the Summit WM Controller to relay DHCP requests to the external DHCP server.
- **SLP (Service Location Protocol) –** A service discovery protocol that allows computers and other devices to find services in a local area network without prior configuration. The client applications are user agents and services that are advertised by a service agent. In larger installations, a directory agent collects information from service agents and creates a central repository. SLP is one of the several modes that the Summit WM Controller uses to discover the Wireless APs.
- Domain Name Server – A server that translates the domain names into IP addresses. The DNS is used as an alternative mechanism for the automatic discovery process. The Summit WM Controller, its software, and the APs rely on the DNS for Layer 3 deployments. In addition, DNS is utilized for the static configuration of APs. The Summit WM Controller can be registered in DNS to provide DNS assisted AP discovery.

Discovery mechanism in Summit WM Controller, Access Points and Software system

The Summit WM Controller, Access Points and Software system provides auto-discovery capabilities between the following components:

- Wireless APs and Summit WM Controller

Discovery mechanism between Wireless AP and Summit WM Controller

The Wireless APs discover the Summit WM Controller by one of the following modes:

- SLP (Multicast and Unicast) – For more information, see SLP's description in "Summit WM Controller, Access Points and Software system topology and network elements" on page 9.
- DNS – For more information, see Domain Name Server's description in "Summit WM Controller, Access Points and Software system topology and network elements" on page 9.
- Static IP address configuration – Summit WM Controller's IP address is defined in Wireless AP configuration. For more information, see "Configuring static IP address for Wireless APs" on page 61.

DHCP in Summit WM Controller, Access Points and Software system

DHCP usage has four scenarios in Summit WM Controller, Access Points and Software system:

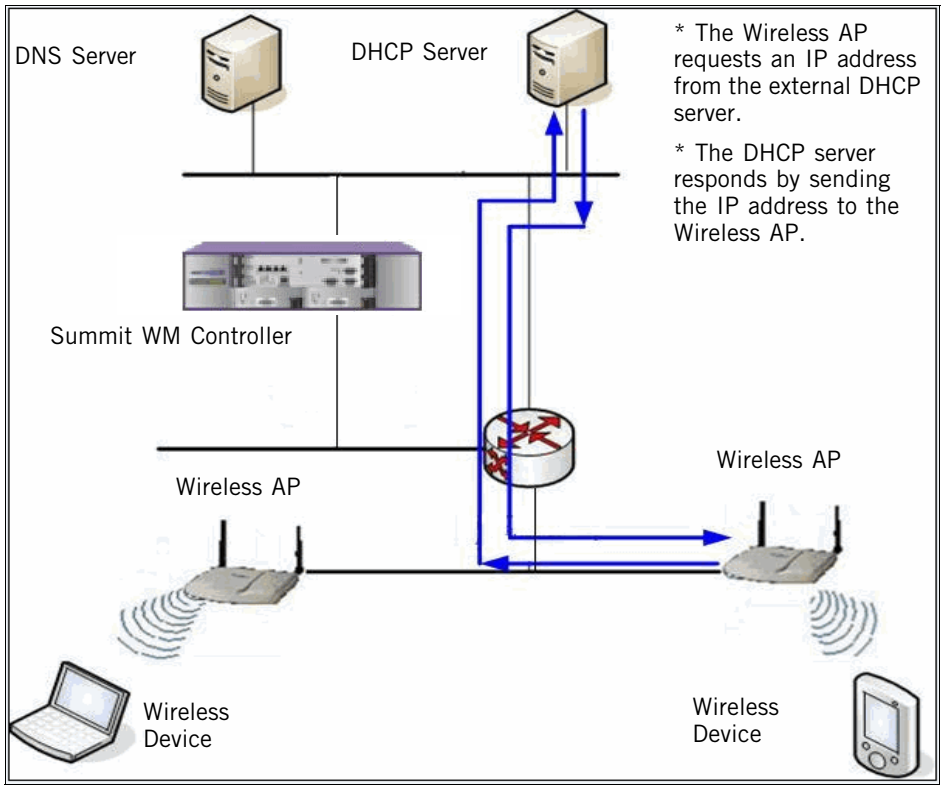
- DHCP for Wireless APs
- DHCP for WM-AD

- DHCP relay for WM-AD
- DHCP for traffic bridged locally at Wireless AP

The following sections explain the four scenarios with the help of graphical illustrations.

DHCP for Wireless APs

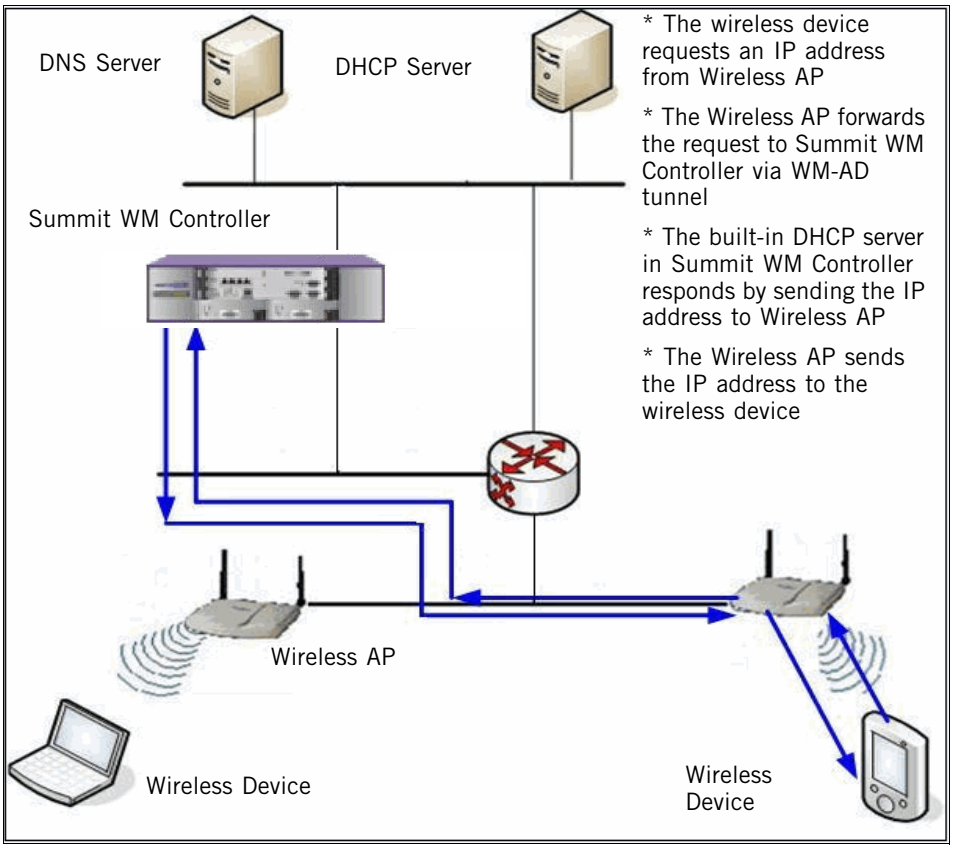
Figure 2: DHCP for Wireless APs


DNS Server
DHCP Server
* The Wireless AP requests an IP address from the external DHCP server.
* The DHCP server responds by sending the IP address to the Wireless AP.
Summit WM Controller
Wireless AP
Wireless AP
Wireless Device
Wireless Device

You can use Windows 2003 server, amongst others, for deploying DHCP service for Wireless APs. For more information, see "DHCP service configuration" on page 41.

DHCP for WM-AD

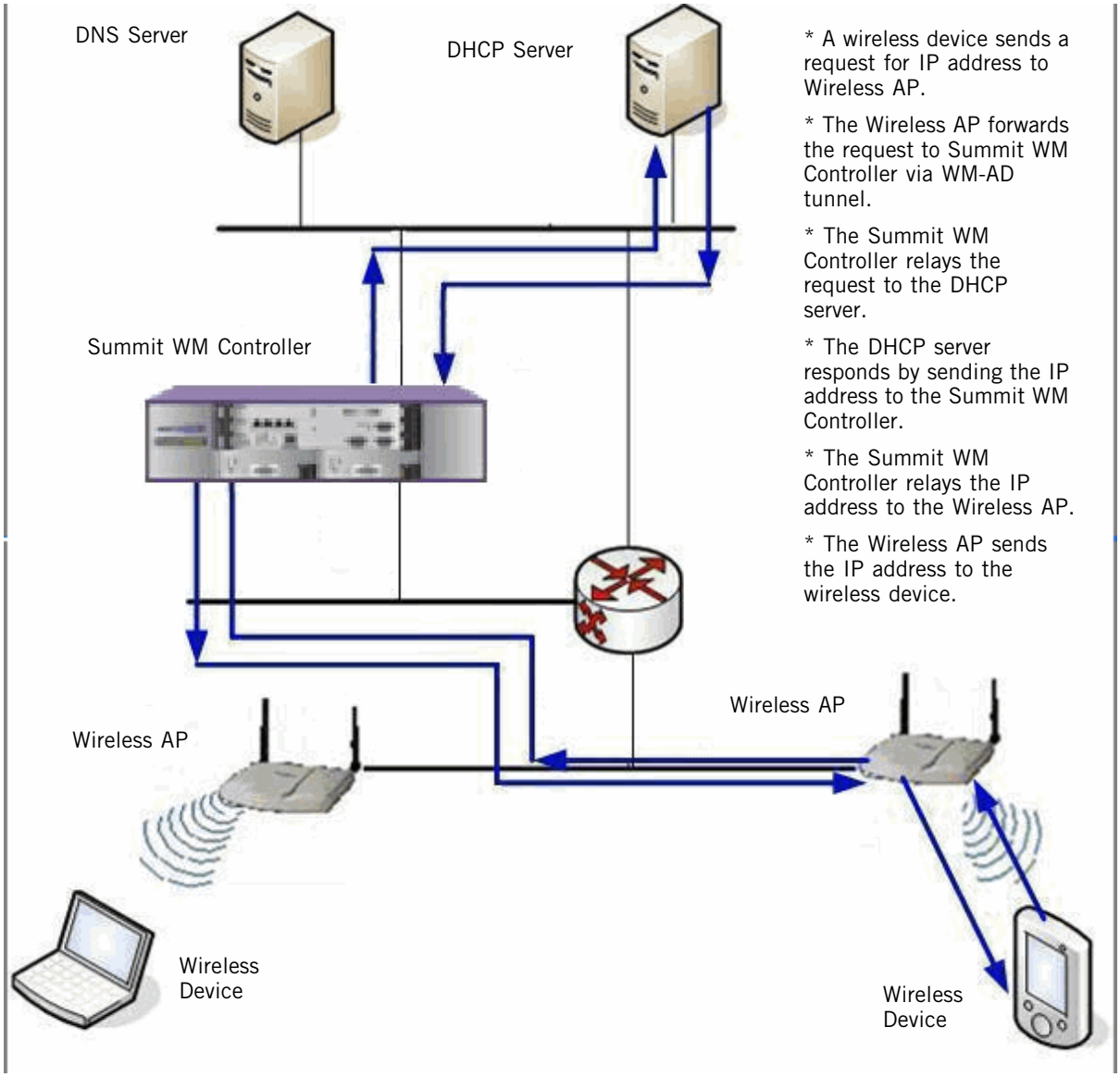
Figure 3: DHCP for WM-AD


DNS Server
DHCP Server
* The wireless device requests an IP address from Wireless AP
* The Wireless AP forwards the request to Summit WM Controller via WM-AD tunnel
* The built-in DHCP server in Summit WM Controller responds by sending the IP address to Wireless AP
* The Wireless AP sends the IP address to the wireless device
Summit WM Controller
Wireless AP
Wireless Device
Wireless Device

The DHCP configuration for WM-AD is done via Summit WM Controller. For more information, see "Creating and configuring a Routed WM-AD" on page 68.

DHCP relay for WM-AD

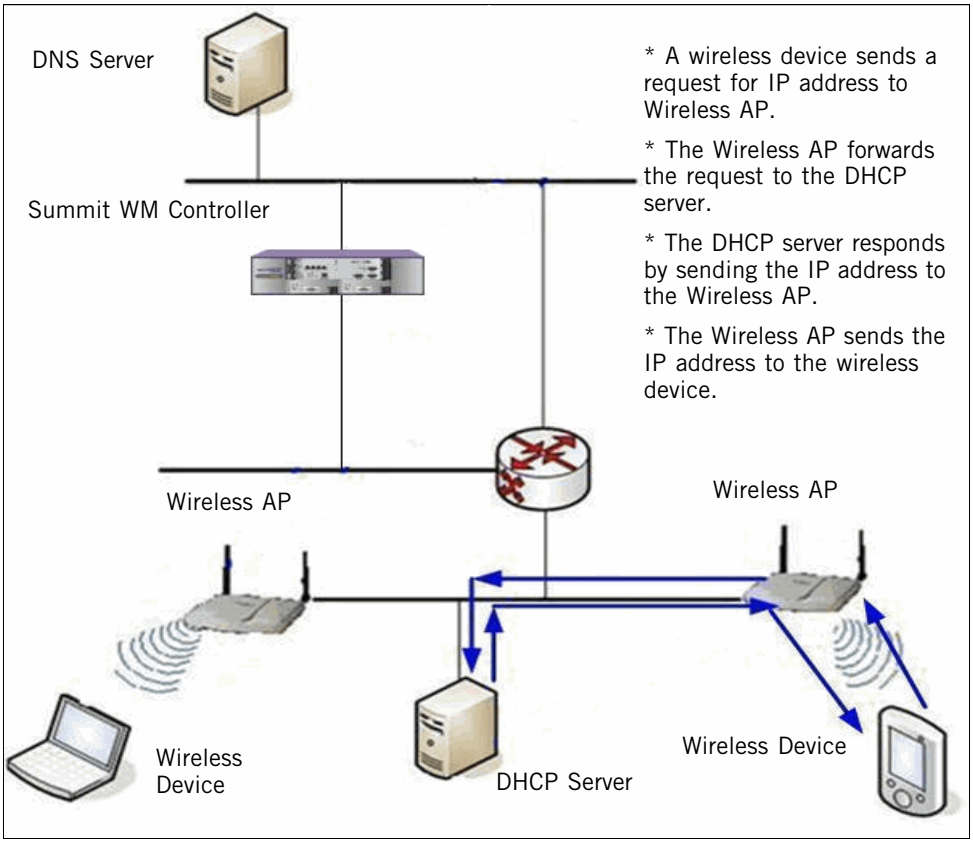
Figure 4: DHCP relay for WM-AD


DNS Server
DHCP Server
* A wireless device sends a request for IP address to Wireless AP.
* The Wireless AP forwards the request to Summit WM Controller via WM-AD tunnel.
* The Summit WM Controller relays the request to the DHCP server.
* The DHCP server responds by sending the IP address to the Summit WM Controller.
* The Summit WM Controller relays the IP address to the Wireless AP.
* The Wireless AP sends the IP address to the wireless device.
Summit WM Controller
Wireless AP
Wireless AP
Wireless Device
Wireless Device

The DHCP relay configuration is done via Summit WM Controller. For more information, see "Creating and configuring a Routed WM-AD" on page 68.

DHCP for traffic bridged locally at Wireless AP

Figure 5: DHCP for traffic bridged locally at Wireless AP


DNS Server
Summit WM Controller
* A wireless device sends a request for IP address to Wireless AP.
* The Wireless AP forwards the request to the DHCP server.
* The DHCP server responds by sending the IP address to the Wireless AP.
* The Wireless AP sends the IP address to the wireless device.
Wireless AP
Wireless AP
Wireless Device
DHCP Server
Wireless Device

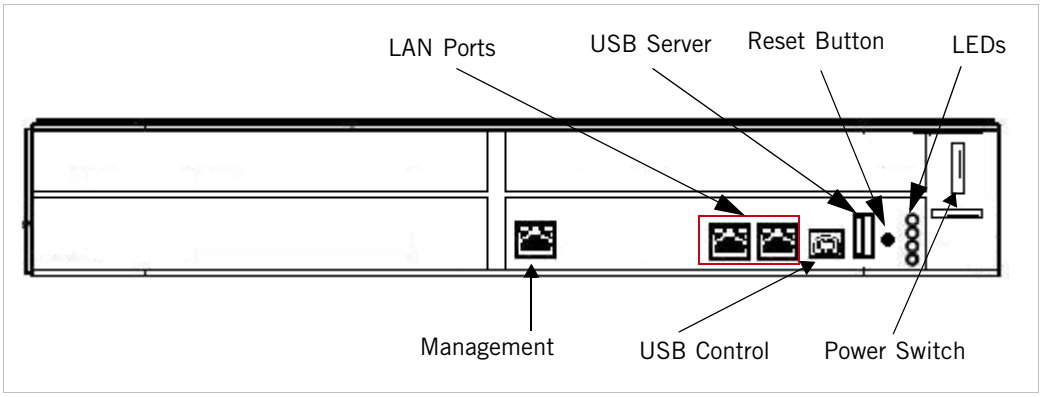
The DHCP relay configuration is done via Summit WM Controller. For more information, see "Creating and configuring a Bridge Traffic Locally at AP WM-AD" on page 71.

Summit WM Controller's physical description

This section provides a physical description of the Summit WM Controller.

Summit WM20 Controller front panel

Figure 6: Summit WM20 Controller front panel



Summit WM20 Controller data port cabling specification

The Summit WM20 Controller's data ports have copper connectors.

NOTE

If your infrastructure does not allow the copper connection, you must get a Gigabit Media Converter to convert the copper connection to a fibre optic connection. For example, you can use Netgear GC102 converter that receives the copper connection and outputs traffic via the fibre optic connector.

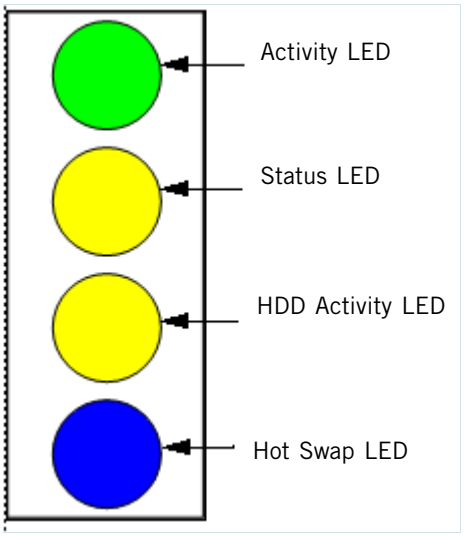
Summit WM20 Controller's LEDs

The Summit WM20 Controller has four lights on its front panel.

NOTE

The hot swap lever is not enabled in the current release. Pulling the hot swap lever will not affect the normal operation if the Summit WM20 Controller is already running. However, if you attempt to reboot the Summit WM20 Controller with the hot swap lever pulled out, the controller will fail to reboot. If you pull the hot swap lever while the Summit WM20 Controller is in operation, the Hot Swap LED will light up.

Figure 7: Summit WM20 Controller LED lights

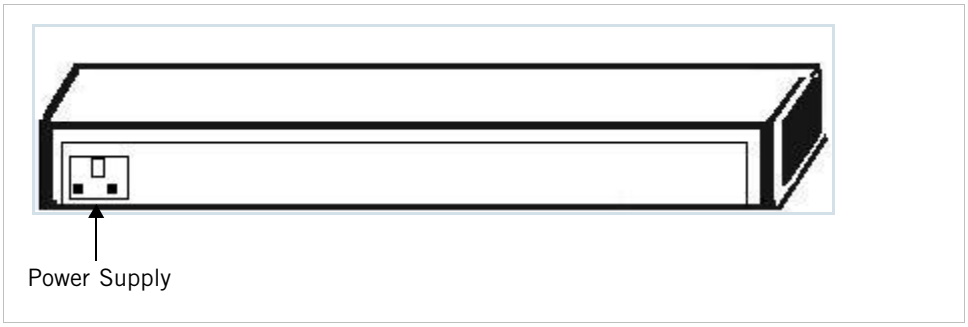


The description of the LED states is provided below:

- ACTIVITY LED – Indicates the CPU activity, including the amount of traffic carried to and from the Wireless APs.
- STATUS LED – Indicates the normal state of the Summit WM Controller as seen by the system's software. This LED covers all stages of the Summit WM Controller, ranging from restarting, to shutting-down. As long as the Summit WM Controller is running normally, this LED will remain lit.
- HDD Activity LED – Is hardware controlled to report Hard Drive Device (HDD) activity. The LED blinks when the HDD is in use (read/write operation).
- Hot Swap LED – Indicates that the hot swap lever on the Summit WM20 Controller is pulled out.

Summit WM20 Controller back panel

Figure 8: Summit WM20 Controller back panel



Collecting information for installation

You should use the following table to document all the pertinent information about the Summit WM Controller before starting the installation process.

Some of the information listed in the table may not be relevant to your network configuration. You should only record the information that is pertinent to your network configuration.

Table 1: Information gathering table

Configuration data	Description	Your entry
Accessing the Summit WM Controller for the first time	• **Unused IP address in the 192.168.10.0/24 subnet** – This IP address must be assigned to the Ethernet port of your laptop computer. You can use any IP address between 192.168.10.2 and 192.168.10.255. • **Factory default IP address of Summit WM Controller** – The factory default IP address is https//192.168.10.1:5825. You must type this IP address in the address bar of your Web browser when you access the Summit WM Controller for the first time. • **Login Information** – The login information is as follows: > User Name: `admin` > Password: `abc123`	
Management Port information	• **Hostname** – Specifies the name of the Summit WM Controller. • **Domain** – Specifies the IP domain name of the enterprise network. • **Management IP Address** – The new IP address for the Summit WM Controller's management port. Change the value in this text box to the IP address assigned to the Summit WM Controller's management port by your network administrator. • **Subnet Mask** – The subnet mask for the IP address to separate the network portion from the host portion of the address (typically 255.255.255.0) • **Management Gateway** – The default gateway of the network. • **Primary DNS** – The primary DNS server used by the network. • **Secondary DNS** – The secondary DNS server used by the network.	
Hardware information	• **MAC Address** – MAC address of the Summit WM Controller's management port • **Serial #** – The Summit WM Controller's serial #.	
License Key (File)	• An *.xml* file that is provided along with the product. This file must be applied to the product to enable all the functionalities.	

Table 1: Information gathering table (Continued)

Configuration data	Description	Your entry
Data Ports information	• **IP address** – IP address of the physical ethernet port. • **Subnet mask** – Subnet mask for the IP address, which separates the network portion from the host portion of the address (typically 255.255.255.0). • **MTU** – The maximum transmission unit or maximum packet size for this port. The default setting is 1500. If you change this setting, and are using OSPF, you must make sure that the MTU of each port in the OSPF link matches. • **Function** – The port's function. > **Host Port** – A port for connecting Wireless APs with no dynamic routing. > **Third-party AP Port** – A port to which the third-party AP is connected. > **Router Port** – A port that connects to an upstream, next-hop router in the network. • **VLAN ID** – The ID of the VLAN to which the AP is connected.	
Static Routing	**Static IP address** – The static IP address that is assigned to the Summit WM Controller when it is configured for static routing.	
OSPF Routing	• **Router ID** – The router ID is its own IP address. You must record the Summit WM Controller's IP address here. • **Area ID of OSPF** – Id of OSPF's area. 0.0.0.0. is the main area in OSPF. • **OSPF Authentication Password** – If you select Authentication type as Password, then you will need a password.	
DHCP Service	• **IP address range** – This is the range from which the IP address will be distributed across the network. > Start IP address – This is the start IP address of the range. > End IP address – This is the end IP address of the range. • **Lease duration** – The DHCP server assigns a client an IP address for a given amount of time. The amount of time for which the IP address can be given is called lease duration. > **Days** – The number of days for which the lease can be given. > **Hours** – The number of hours for which the lease can be given. > **Minutes** – The number of minutes for which the lease can be given.	
IP Address for installing DHCP service	**IP Address** – If you are using WM-AD, you will need the WM-AD' IP address. If you are not using WM-AD, you will need the Summit WM Controller's IP address.	
WM-AD gateway for installing DHCP service	**WM-AD gateway** – If you are using WM-AD, you will need the WM-AD gateway.	
Domain name for installing DHCP service	**Domain name** – Your organization's domain name.	

Table 1: Information gathering table (Continued)

Configuration data	Description	Your entry
Windows 2003 Server's IP address	**IP address** – The IP address of Windows 2003 Server.	
SLP DA's IP address	H**exa values of SLP DA's IP address** – The Wireless APs use the SLP DA to discover the Summit WM Controller. The Mobility Agents use the SLP DA to discover the Mobility Manager. The hexa values of the SLP DA's IP address.	
Internet Protocol configuration for DNS Service in Windows 2003 server	• **Static IP address** – Windows 2003 server's static IP address. • **Subnet Mask** – Subnet mask of Windows 2003 server's static IP address. • **Gateway** – Windows 2003 server's gateway. • **ISP's IP address** – Your ISP's (Internet Service Provider) IP address. • **IP address** – Summit WM Controller's IP address.	
Port information for installing IAS in Windows 2003 server	• **Authentication Port** – Summit WM Controller's port # used to access the IAS service. • **Accounting Port** – Type the Summit WM Controller's port # that is used to access the accounting service. The values you record here should match what you define in the **Port** text box of **Auth** section in the **Acc & Acct** tab of Summit WM Controller's WM-AD screen.	
Wireless AP's properties	• **Summit WM Controller's Port #** – Summit WM Controller's ethernet port to which the Wireless AP is connected. • **Country** – The country where the Wireless AP operates. • **Serial #** – A unique identifier that is assigned during the manufacturing process of the Wireless APs. • **Hardware version** – The current version of the Wireless AP hardware. • **Application version** – The current version of the Wireless AP software. • **VLAN ID** – The ID of the VLAN on which the Wireless AP operates.	
Local DHCP Server In Routed WM-AD	• **Gateway** – The Summit WM Controller advertises this address to the wireless devices when they sign on and get a dynamic IP address. The gateway corresponds to the IP address that is communicated to mobile users. • **Subnet mask** – Subnet mask for the gateway IP address to separate the network portion from the host portion of the address (typically 255.255.255.0). • **Address range** – The range from which the IP addresses are provided to the wireless devices that use the WM-AD. • **External enterprise domain name** – The external enterprise domain name. • **DNS Server IP address** – The IP address of the domain name server on the enterprise network.	

Table 1: Information gathering table (Continued)

Configuration data	Description	Your entry
DHCP Relay in Routed WM-AD	• **Gateway** – The Summit WM Controller advertises this address to the wireless devices when they sign on and get a dynamic IP address. The gateway corresponds to the IP address that is communicated to mobile users. • **Subnet mask** – Subnet mask for the gateway IP address to separate the network portion from the host portion of the address (typically 255.255.255.0). • **DHCP Server IP address(es)** – IP addresses of the external DHCP servers on the enterprise network.	
Next Hop Routing for Routed WM-AD	• **Next hop IP address** – The next-hop IP identifies the target device to which all WM-AD (user traffic) will be forwarded to. Next-hop definition supersedes any other possible definition in the routing table. • **OSPF routing cost** – The OSPF cost value provides a relative cost indication to allow upstream routers to calculate whether or not to use the Summit WM Controller as a better fit, or lowest cost path to reach the devices in a particular network. The higher the cost, the less likely that the Summit WM Controller will be chosen as a route for traffic, unless that Summit WM Controller is the only possible route for that traffic	
VLAN Information for Bridge Traffic Locally at WM WM-AD	• **VLAN ID** – The ID # of VLAN that is mapped to a Summit WM Controller interface. • **Interface** – The name of the interface to which the VLAN is mapped. • **Interface IP address** – The interface's IP address. • **Mask** – The subnet mask of the WM-AD.	
VLAN ID for Bridge traffic locally at AP WM-AD	• **VLAN ID** – The ID #of VLAN that is mapped to a Summit WM Controller interface.	
Authentication and Accounting information for captive portal configuration	• **Port** – Used to access the RADIUS server. The default is 1812. • **# of Retries** – The number of times the Summit WM Controller will attempt to access the RADIUS server. • **Timeout** – The maximum time for which Summit WM Controller will wait for a response from the RADIUS server before making a re-attempt. • **NAS Identifier** – A RADIUS attribute that identifies the server responsible for passing information to the designated servers and then acting on the response returned. This is optional.	

Table 1: Information gathering table (Continued)

Configuration data	Description	Your entry
Internal captive portal settings information	• **Login Label** – The text that will appear as a label for the user name. • **Password Label** – The text that will appear as a label for the user password text box. • **Header URL** – The URL of the file to be displayed in the header of the Captive Portal screen. • **Footer URL** – The URL of the file to be displayed in the footer of the Captive Portal screen. • **Message** – The message that you type in this text box will be displayed above the Login text box to greet the user. You can type a message, explaining why the Captive Portal screen is used and the instructions for the user. • **Replace Gateway IP with FQDN** – If you are using FQDN (Fully Qualified Domain Name) as the gateway address, document the FQDN. • **Default Redirection URL** – The URL to which the wireless devices will be directed after authentication.	
Shared Secret Password for external captive portal configuration	**Password** – This password encrypts the information exchanged between the Summit WM Controller and the external Captive Portal server.	
MAC-based authentication information	• **Port** – The port used to access the RADIUS server. The default is 1812. • **# of Retries** – Number of times the Summit WM Controller will attempt to access the RADIUS server. • **Timeout** – The maximum time for which Summit WM Controller will wait for a response from the RADIUS server before making a re-attempt. • **NAS IP Address** – IP address of the network access server (NAS).	
Exception filter rules information	**IP/subnet** – The destination IP address. You can also specify the IP range, a port designation or a port range on the IP address here.	
Static WEP privacy information	• **WEP Key Length** – Size of a WEP key. • **Strings** – This is the secret WEP key string.	
WPA-PSK privacy information	• **Broadcast re-key interval** – The time interval (in seconds) after which you want the broadcast encryption key to be changed automatically. The default is 3600. • **Pre-shared Key** – The shared secret key that is to be used between the wireless device and the Wireless AP. • The shared secret key is used to generate the 256 bit key.	
Dynamic WEP privacy information	**Broadcast re-key interval** – The time interval (in seconds) after which you want the broadcast encryption key to be changed automatically. The default is 3600.	

Table 1: Information gathering table (Continued)

Configuration data	Description	Your entry
Availability information	• Primary Summit WM Controller's IP address • Secondary Summit WM Controller's IP address • IP address of primary Summit WM Controller's physical port • IP address of secondary Summit WM Controller's physical port	

2 Summit WM Controller configuration

This chapter explains how to configure the Summit WM Controller's settings to make it operational.

The topics in this chapter are organized as follows:

- "Accessing the Summit WM Controller for the first time" on page 23
- "Connecting the Summit WM Controller to the enterprise network" on page 27
- "Changing the administrator password" on page 27
- "Configuring the network time" on page 27
- "Applying a license key" on page 29

Accessing the Summit WM Controller for the first time

You can access the Summit WM Controller by using a laptop computer with a Web browser.

To access the Summit WM Controller using a web-enabled laptop:

1 Connect the Summit WM Controller's management port to the web-enabled laptop computer with a cross-over RJ 45 Ethernet cable.

2 Statically assign an unused IP address in the 192.168.10.0/24 subnet for the Ethernet port of the laptop computer.

You can use any IP address from 192.168.10.2 to 192.168.10.255.

3 Launch your web browser.

4 In the address bar, type `https//192.168.10.1:5825`. The **The Summit WM GUI** login screen is displayed.

Extreme Networks Summit™ WM-Series Console
Summit™ WM-Series Home
Extreme Networks - Summit WM-Series WLAN Switch Software
Please Login to access pages of Summit WM-Series WLAN Switch Software.
If you do not have the login information, please contact your administrator.
User Name:
Password:
Login

5 In the **User Name** text box, type `admin`.

6 In the **Password** text box, type `abc123`.

7 Click **Login**. The **Summit WM GUI** is displayed.

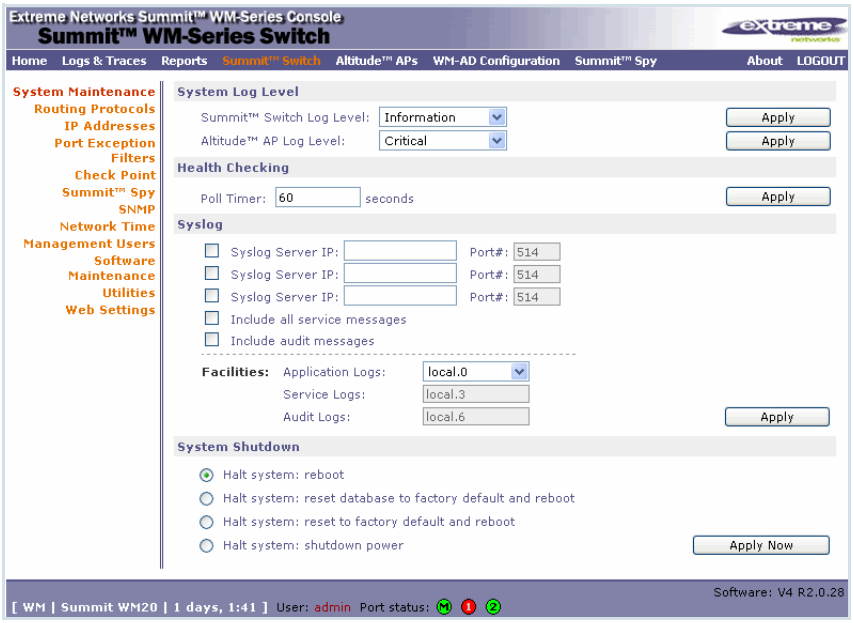
Extreme Networks Summit™ WM-Series Console
Summit™ WM-Series Home
Summit WM-Series WLAN Switch Software Main Menu
About
LOGOUT
Logs & Traces
Reports & Displays
Summit™ Switch Configuration
Altitude™ AP Configuration
WM Access Domain Configuration
Summit™ Spy
Software: V4 R2.0.28
[WM | Summit WM20 | 1 days, 1:26] User: admin Port status:

NOTE

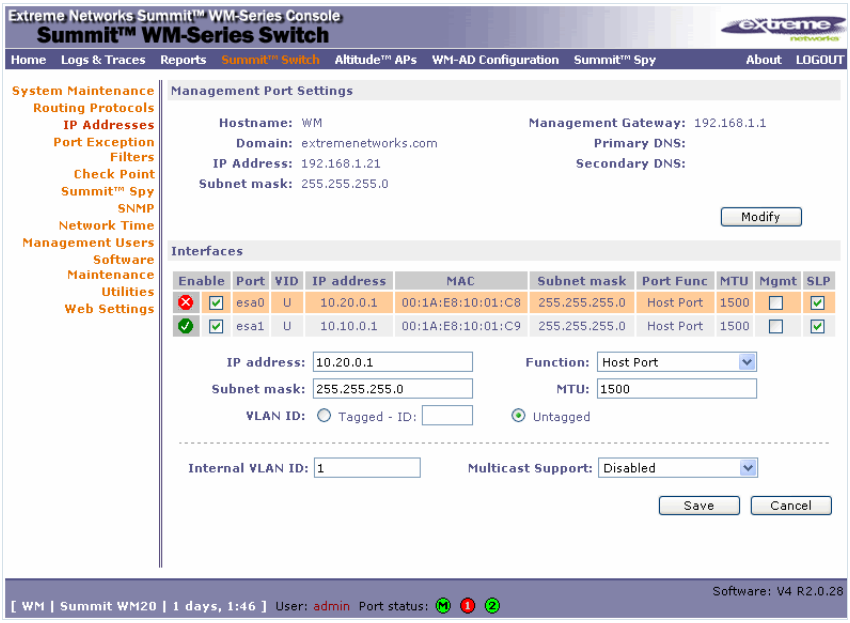
In the footer of the Summit WM GUI, the following is displayed:

- ***[host name | product name | up time]***
- *For example, [WM20 | 01 days, 19:54]. If there is no key (unlicensed),* ***UNLICENSED*** *is displayed besides the software version.*
- ***User*** *is the user id you used to login in. For example, admin.*
- ***Port*** *Status is the connectivity state of the port.* ***M*** *is for the Management interface, which is on eth0 and the numbered lights reflect the esa ports on the system. Green indicates the interface is active and running. Red indicates the interface is down.*

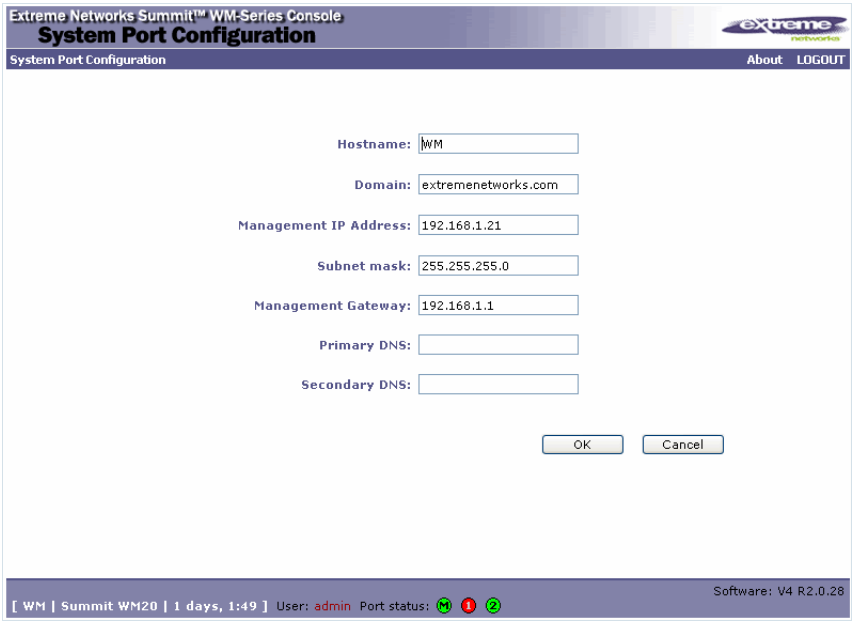
8 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.



9 In the left pane, click **IP Addresses**. The factory default settings for the Summit WM Controller are displayed.



10 In the **Management Port Settings** section, click **Modify**. The **System Port Configuration** screen is displayed.



11 Type the following information:

- **Hostname** – Specifies the name of the Summit WM Controller by which it will be known. You must assign a unique name for the Summit WM Controller.
- **Domain** – Specifies the IP domain name of the enterprise network.
- **Management IP address** – Specifies the new IP address for the Summit WM Controller's managementport. Change the value in this text box to the IP address assigned to the Summit WM Controller's management port by your network administrator.
- **Subnet Mask** – Specifies the subnet mask for the Summit WM Controller's management port. Change the value in this text box to the value provided by your network administrator.
- **Management Gateway** – Specifies the default gateway of the network as provided by the network administrator.
- **Primary DNS** – Specifies the primary DNS server used by the network as provided by your network administrator as provided by your network administrator. This field is optional.
- **Secondary DNS** – Specifies the secondary DNS server used by the network as provided by your network administrator. This field is optional.

12 Click **OK**.

NOTE

The Web connection between the computer and the Summit WM Controller is lost. The IP addresses are now set to the network you defined.

Now you should connect the Summit WM Controller to the enterprise network. The following section explains how to connect the Summit WM Controller to the enterprise network.

Connecting the Summit WM Controller to the enterprise network

To connect the Summit WM Controller to the enterprise network:

1 Disconnect your laptop computer from the Summit WM Controller management port.

2 Connect the Summit WM Controller management port to the enterprise Ethernet LAN. The Summit WM Controller resets automatically.

3 Log on to the Summit WM GUI from any computer on the enterprise network. Type the following URL in a browser to access the Summit WM GUI: `https://<IP Address>:5825`

Before you proceed further, you should change the default administrator password. The following section explains how to change the default administrator password.

Changing the administrator password

To change the administrator password:

1 Login on the Summit WM Controller using the default administrator password.

2 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.

3 In the left, click **Management Users.**

4 In the user_admin table, click **admin**.

5 In the **Modify User Password** text box, type the new administrator password.

6 In the **Modify User Confirm Password** text-box, retype the new administrator password.

7 Click **Change Password**.

Configuring the network time

The internal clocks of the Summit WM Controller and Wireless APs on a network may differ. You **must** synchronize the clocks of the Summit WM Controller, and the Wireless APs in order for the system to operate properly.

The synchronization of clocks ensures accuracy in usage logs of the Summit WM Controller.

The Summit WM Controller provides you the following two options to synchronize the clocks of Summit WM Controller and the Wireless APs:

- Using the system's time – The system's time is the Summit WM Controller's time.
- Using the network time protocol (NTP) – The Network Time Protocol is a protocol for synchronizing the clocks of computer systems over packet-switched data networks.

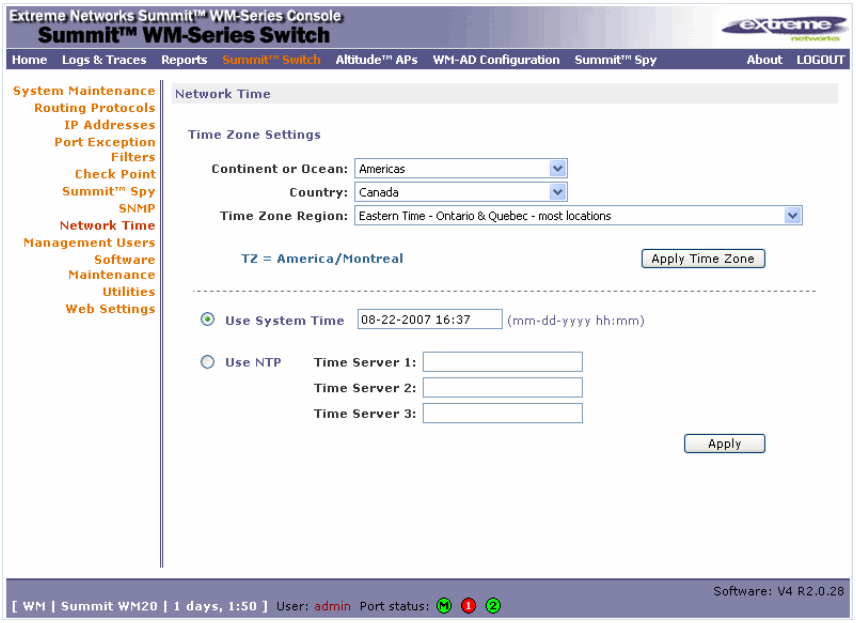
Configuring the network time using the system's time

To configure the network time, using the system's time:

1 Login on the Summit WM Controller. The Summit WM GUI screen is displayed.

2 Click **Summit Switch**. The **Summit Switch** screen is displayed.

3 In the left pane, click **Network Time**. The **Network Time** screen is displayed.



4 From the **Continent or Ocean** drop-down list, click the appropriate large-scale geographic grouping for the time zone.

5 From the **Country** drop-down list, click the appropriate country for the time zone. The contents of the drop-down list change, based on the selection in the **Continent or Ocean** drop-down list.

6 From the **Time Zone Region** drop-down list, click the appropriate time zone region for the selected country.

7 Click **Apply Time Zone**.

8 Select the **Use System Time** radio button.

You can modify the system's date and time by changing the entries in the **Use System Time** text box. The date is in **mm-dd-yyyy** format and the time is in **hh:mm** format.

9 Click **Apply**.

10 Reboot the Summit WM Controller. The WLAN network time is synchronized in accordance with the Summit WM Controller's time.

Configuring the network time using the NTP

To configure the network time using the NTP:

1 Perform Step 1 to Step 7 of "Configuring the network time using the system's time" on page 28.

2 Select **Use NTP** radio button.

3 In the **Time Server 1** text box, type the IP address or FQDN (Full Qualified Domain Name) of a NTP Time Server that is accessible on the enterprise network.

4 Repeat Step 3 for **Time Server2** and **Time Server3** text boxes.

If the system is not able to connect to the **Time Server 1**, it will attempt to connect to the additional servers that have been specified in **Time Server 2** and **Time Server 3** text boxes.

5 Click **Apply**.

6 Reboot the Summit WM Controller. The WLAN network time is synchronized in accordance with the specified time server.

Now you should apply a license key to the Summit WM Controller in order to enable its all the functionalities.

Applying a license key

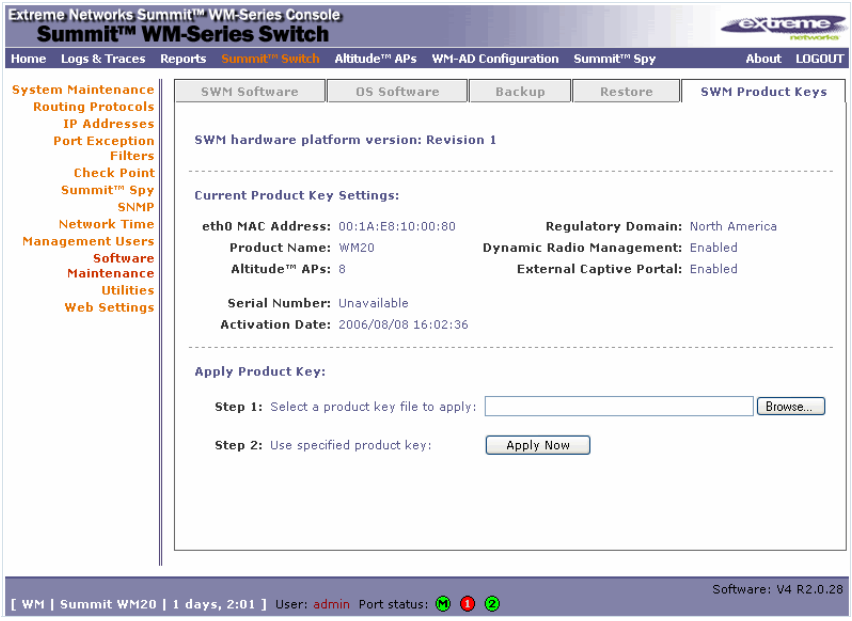
To apply the license:

1 Login on the Summit WM Controller.

2 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.

3 In the left pane, click **Software Maintenance**.

4 Click the **SWM Product Keys** tab.



5 In the **Apply Product Key** section, click **Browse** to navigate to the location of the software license file, and select the file.

6 Click **Apply Now**. The software license key is applied, and the Summit WM Controller reboots.

Now you should configure the Summit WM Controller's physical ports. The following chapter describes how to configure the Summit WM Controller's physical ports.

3 Physical ports configuration

This chapter describes how to configure the Summit WM Controller's physical ports.

The topics in this chapter are organized as follows:

- "Physical data ports overview" on page 31
- "Configuring data ports" on page 32

Physical data ports overview

Port configuration defines the administrative state of each interface. By default, the data interface states are disabled. You must enable each of the data interfaces individually. A disabled interface does not allow data to flow (receive/transmit).

You can define the data ports to function as one of the following three types:

- Host Port – You must use a Host Port definition to connect the Access Points with dynamic routing disabled. The dynamic routing is disabled to ensure that the port does not participate in dynamic routing operations to advertise the availability of WM Access Domain Services (WM-AD) hosted by the WM. Host ports may still be used as the target for static route definitions.
- Third-party AP Port – You must use a Third-party AP Port definition for a port to which you will be connecting the third-party APs. The third-party APs must be deployed within a segregated network for which the Summit WM Controller becomes the single point of access to the network. When you define a port as the third-party AP port, the interface segregates the third-party AP from the remaining network. Only one port can be configured for the third-party APs.
- Router Port – You must use a Router Port definition for a port that you will be connecting to an upstream, next-hop router in the network. When you define a port as the router port, the system knows that the particular interface is eligible to participate in dynamic routing protocol exchanges. The Summit WM Controller supports OSPF as the dynamic routing protocol.

The Summit WM Controller is shipped from the factory with all of its data ports set-up as host ports. You must set-up or configure how each port should function.

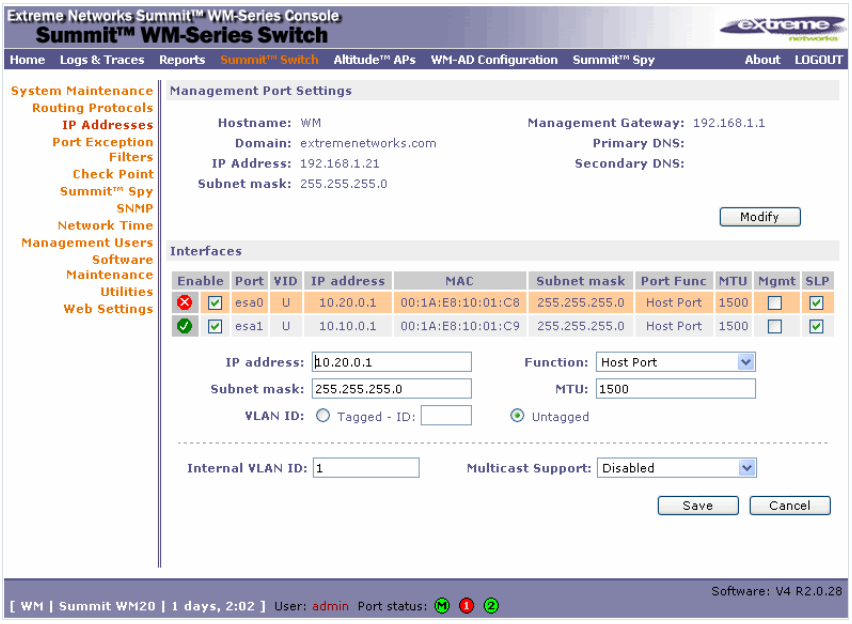
If the interface is directly attached to an existing VLAN, you must specify which VLAN the port belongs to by tagging the **VLAN ID** to the port. When you tag the VLAN ID to the port, all packets associated with the port would be tagged with the corresponding VLAN. This enables the Summit WM Controller to directly connect to a VLAN network without the need to remove VLAN tags at the connection port.

Configuring data ports

To configure the data port interfaces on the Summit WM Controller:

1 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.

2 In the left pane, click **IP Addresses**. The **Management Port Settings** screen is displayed.



The lower part of the screen displays the two ethernet ports, and each MAC address is displayed under the MAC column. The lowest part of the screen displays the text boxes for IP address, MAC address, Subnet mask and MTU. You can edit these values.

3 To enable the port, select the checkbox under the **Enable** column.

NOTE

You must disable all the interfaces that are not in use in order to avoid routing loops.

4 Type the following:

- **IP address** – The IP address of the physical ethernet port.
- **Subnet mask** – The subnet mask for the IP address, which separates the network portion from the host portion of the address (typically 255.255.255.0)
- **MTU** – The maximum transmission unit or maximum packet size for this port. The default setting is 1500. If you change this setting, and are using OSPF, you must make sure that the MTU of each port in the OSPF link matches.

NOTE

The Summit WM Controller and Wireless AP are capable of participating in MTU discovery. During the MTU discovery process, the Summit WM Controller and Wireless AP automatically learn the correct MTU, and then correct their settings accordingly. If the routed connection to an Wireless AP travels a link that imposes a lower MTU than the configured MTU, the Summit WM Controller and Wireless AP will correct their MTU settings

5 From the **Function** drop-down list, click one of the three functions.

- **Host Port** – Specifies a port for connecting Wireless APs with no dynamic routing.
- **Third-party AP Port** – Specifies a port to which the third-party AP is connected.
- **Router Port** – Specifies a port that connects to an upstream, next-hop router in the network.

6 To enable management traffic on the port, select the **Mgmt** checkbox.

Enabling management provides access to the Summit WM Controller through the selected port using SNMP ("get" only), SSH and HTTPS management services.

7 To enable the SLP protocol, select the **SLP** checkbox.

Selecting the **SLP** checkbox will enable the Summit WM Controller to advertise this port to the network for Wireless APs' discovery.

8 Select either of the two VLAN options:

- **Untagged**: Select **Untagged,** if you are not using VLAN.
- **Tagged**: Select **Tagged**, and specify the VLAN ID in the **VLANID** text box, if you are using VLAN.

9 To allow multicast support, click **Enabled** from the drop-down list.

When you enable the multicast support, the interface is used for relaying multicast traffic between core and wireless devices. You must define only one port for the multicast traffic.

10 To save your changes, click **Save**.

11 Repeat Step 3 to Step 10 for every port that is to be enabled.

Now you should configure the routing on the Summit WM Controller. The following chapter describes how to configure the Summit WM Controller's physical ports.

4 Routing configuration

This chapter explains how to configure static routing and OSPF routing on the Summit WM Controller.

The topics in this chapter are organized as follows:

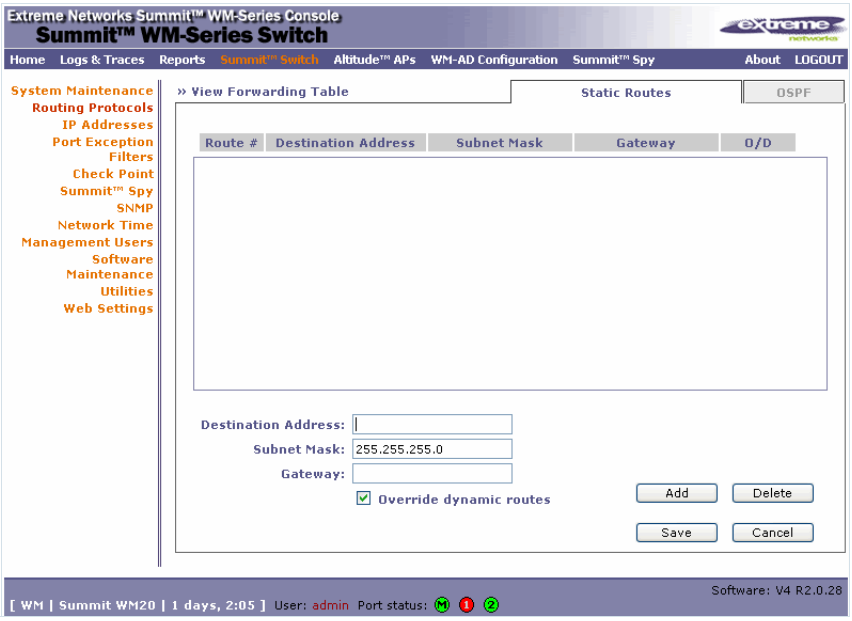
- "Configuring a static route" on page 35
- "Configuring the OSPF routing" on page 36

Configuring a static route

To configure a static route:

1 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.

2 In the left pane, click **Routing Protocols**. The **Routing Protocols** screen is displayed.



3 To add a new route, type the destination IP address of a packet in the **Destination Address** text box.

To define a default static route for any unknown address not in the routing table, type `0.0.0.0`. This is also called as defining the default gateway.

4 Type the appropriate subnet mask in the **Subnet Mask** text box to separate the network portion from the host portion of the IP address (typically 255.255.255.0).

To define a default static route for any unknown address, type `0.0.0.0`.

5 Type the IP address of the specific router port or gateway that serves as the next-hop for the packets from Summit WM Controller gateway).

This router port (or gateway) must be on the same subnet as the Summit WM Controller.

6 Click **Add**. The new route is added to the list of routes.

7 Select the **Override dynamic routes** check box to give priority over the OSPF routes that the Summit WM Controller uses for routing.

By default, the **Override dynamic routes** is enabled. If you want to remove priority for static routes so that the routing is always controlled dynamically, clear the **Override dynamic routes** check box.

8 To save your changes, click **Save**.

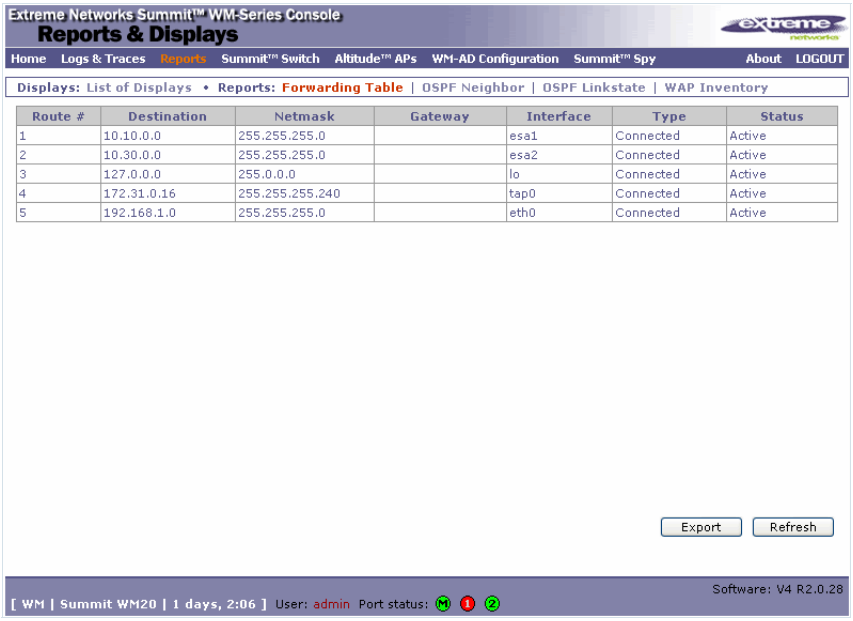
Viewing the forwarding table

You can view the defined routes, whether static or OSPF, and their current status in the forwarding table.

To view the forwarding table:

1 From the main menu, click **Reports**. The **Reports & Displays** screen is displayed.

2 Click **Forwarding Table**. The **Forwarding Table** is displayed.


Extreme Networks Summit™ WM-Series Console
Reports & Displays
Home Logs & Traces Reports Summit™ Switch Altitude™ APs WM-AD Configuration Summit™ Spy About LOGOUT
Displays: List of Displays • Reports: Forwarding Table | OSPF Neighbor | OSPF Linkstate | WAP Inventory
Route # Destination Netmask Gateway Interface Type Status
1 10.10.0.0 255.255.255.0 esa1 Connected Active
2 10.30.0.0 255.255.255.0 esa2 Connected Active
3 127.0.0.0 255.0.0.0 lo Connected Active
4 172.31.0.16 255.255.255.240 tap0 Connected Active
5 192.168.1.0 255.255.255.0 eth0 Connected Active
Export
Refresh
Software: V4 R2.0.28
[WM | Summit WM20 | 1 days, 2:06] User: admin Port status:

3 To update the display, click **Refresh**.

Configuring the OSPF routing

To configure the OSPF routing, you must:

- Define one data port as a router port on the **IP addresses** screen.
- Enable OSPF globally on the Summit WM Controller. For more information, see "Enabling OSPF globally on the Summit WM Controller" on page 37.
- Define the global OSPF parameters. For more information, see "Defining the global OSPF parameters" on page 38.

  Ensure that the OSPF parameters defined for the Summit WM Controller are consistent with the adjacent routers in the OSPF area. The consistency includes the following:

- Timer Settings – If the peer router has different timer settings, the protocol timer settings in the Summit WM Controller must be changed to the peer router to match in order to achieve OSPF adjacency.
- MTU – The MTU of the ports on either sides of the OSPF link must match. You must remember here that the MTU for ports is set to 1500 on the Summit WM Controller is when configuring the physical data ports on IP addresses' screen. The value of 1500 matches the MTU in standard routers.

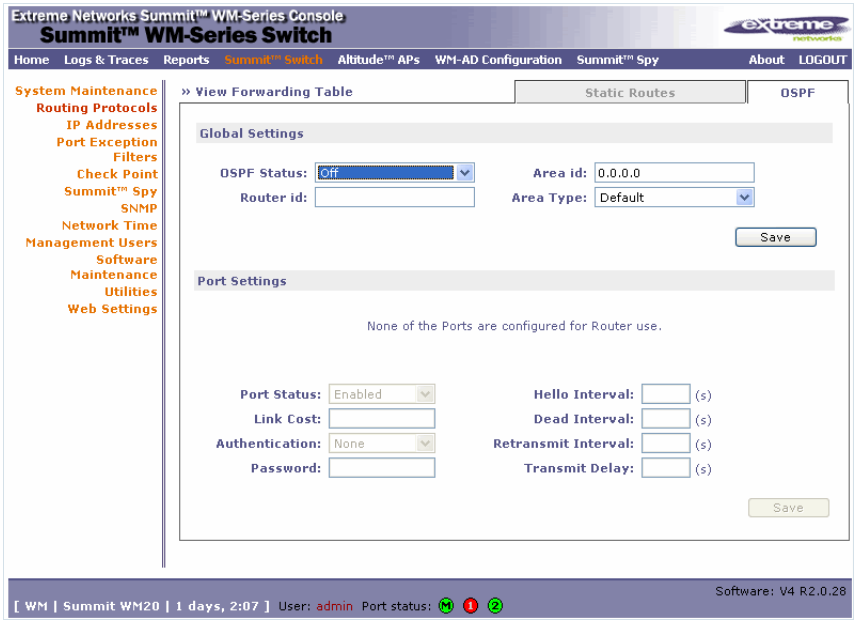
Enabling OSPF globally on the Summit WM Controller

To enable the OSPF globally on the Summit WM Controller:

1 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.

2 In the left pane, click **Routing Protocols**. The **Routing Protocols** screen is displayed.

3 Click the **OSPF** tab.



4 From the **OSPF Status** drop-down list, click **ON** to enable OSPF.

5 In the **Router ID** text box, type the IP address of the Summit WM Controller.

The router ID must be unique across the OSPF area.

If the **Router ID** text box is left blank, the IP address of one of the Summit WM Controller's will be picked as the router ID.

6 In the **Area ID** text box, type the area.

The main area in OSPF depends upon your network configuration. You should find out the main area from your network administrator.

7 In the **Area Type** drop-down list, click one of the following:

- **Default** – Acts as the backbone area (also known as area zero). It forms the core of an OSPF network. All other areas are connected to it, and inter-area routing occurs via a router connected to the backbone area.
- **Stub** – Does not receive external routes. External routes are defined as routes, which are distributed in OSPF via another routing protocol. Therefore, the Stub area relies on a default route to send traffic routes outside the present domain.
- **Not-so-stubby** – A type of stub area that can import autonomous system (AS) external routes and send them to the default/backbone area, but can not receive AS external routes from the backbone or other areas.

8 To save your changes, click **Save**.

Defining the global OSPF parameters

To define the global OSPF parameters:

1 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.

2 In the left pane, click **Routing Protocols**. The **Routing Protocols** screen is displayed.

3 Click the **OSPF** tab.

4 From the **Port Status** drop-down list, click **Enabled**. The OSPF is enabled on the port.

NOTE

Only the interfaces defined as router type are available for OSPF neighborhood establishment.

5 In the **Link Cost** text box, type the OSPF standard for your network for this port.

The **Link Cost** is the cost of sending a data packet on the interface. The lower the cost, the more likely the interface will be used to forward the data traffic.

NOTE

*If more than one port is enabled for OSPF, you must prevent the Summit WM Controller from serving as a router for the other traffic. In order to do this, you must set the **Link Cost** to its maximum value of 65535.*

6 From the **Authentication** drop-down list, click the authentication type of OSPF on your network:

- **None**: The default is **None**. If **None** is selected, leave the **Password** text box blank.
- **Password**: If **Password** is selected, type the password in the **Password** text box in the.

7 Type the values in the following text boxes.

- **Hello-Interval** – Specifies the time in seconds (displays OSPF default). The default setting is 10.
- **Dead-Interval** – Specifies the time in seconds (displays OSPF default). The default setting is 40.
- **Retransmit-Interval** – Specifies the time in seconds (displays OSPF default). The default setting is 5.
- **Transmit Delay** – Specifies the time in seconds (displays OSPF default). The default setting is 1.

8 To save your changes, click **Save**.

Now you must confirm that the ports are set for OSPF.

Confirming the ports are set for OSPF

To confirm the ports are set for OSPF:

1 From the main menu, click **Summit Switch**. The **Summit Switch** screen is displayed.

2 On the **Routing Protocols** screen, click **View Forwarding Table**. The **Forwarding Table** is displayed.

3 Click the **OSPF Neighbor** tab.

If OSPF protocol is enabled, this report displays the current neighbors for OSPF.

4 Click the **OSPF Linkstate** tab.

If OSPF protocol is enabled, the report displays the link state advertisement (LSAs) received by the running OSPF protocol.

5 To update the screen, click **Refresh**.

Now you should configure the DHCP, DNS and RADIUS servers on the network.

The following chapter explains how to configure DHCP, DNS and IAS services on Windows 2003 Server.

5 Configuring DHCP, DNS and IAS services

This chapter describes how to configure DHCP, DNS and IAS services on Windows 2003 Server. In addition, the chapter explains how to configure DHCP service on a Linux-based server.

Note that your Windows 2003 or Linux server may have a different configuration process than what is described here. You should refer to your manufacturer's document to know the configuration process that is specific to your server.

The configuration processes described in this chapter should be used as examples.

The topics in this chapter are organized as follows:

- "DHCP service configuration" on page 41
- "IAS service configuration" on page 46
- "DNS service configuration" on page 53

DHCP service configuration

Before you can configure the DHCP service, you must install it on the server. DHCP is not installed by default during a typical installation of Windows Standard Server 2003 or Windows Enterprise Server 2003. You can install DHCP either during the initial installation of Windows Server 2003 or after the initial installation is completed.

You may also include **078 SLP DA Option**. The **078 SLP DA Option** is not included by default during a typical installation of DHCP service.

You may visit http://support.microsoft.com to learn how to install DHCP and 078 SLP DA Option on Windows 2003.

The following section describes how to configure DHCP for Summit WM Wireless LAN (WLAN) Solution.

Configuring DHCP in Windows 2003 Server

You must also enable **078 SLP DA Option** for every scope you define. A scope is a collection of IP addresses meant to be distributed by the DHCP server to the client devices on a subnet.

The SLP DA is used by:

- The Wireless APs to discover the Summit WM Controller.
- The Mobility Agents to discover the Mobility Manager.

To configure DHCP in Window 2003 Server:

1 Click **Start**, point to **Administrative Tool**, and then click **DHCP**.

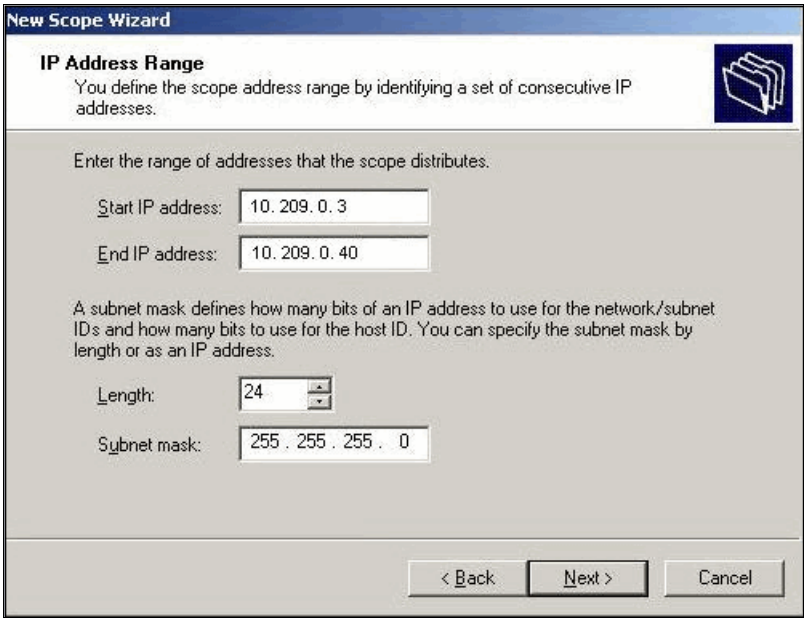
2 In the console tree, right-click the DHCP server on which you want to create the new DHCP scope, and then click **New Scope**.

3 Click **Next**. The **Scope Name** window is displayed.

4 In the **Name** and **Description** text boxes, type the scope's name and the description respectively.

This can be any name that you want, but it should be descriptive enough so that you can identify the purpose of the scope on your network.

5 Click **Next**. The **IP Address Range** window is displayed.


New Scope Wizard
IP Address Range
You define the scope address range by identifying a set of consecutive IP addresses.
Enter the range of addresses that the scope distributes.
Start IP address:
10. 209. 0. 3
End IP address:
10. 209. 0. 40
A subnet mask defines how many bits of an IP address to use for the network/subnet IDs and how many bits to use for the host ID. You can specify the subnet mask by length or as an IP address.
Length:
24
Subnet mask:
255 . 255 . 255 . 0
< Back
Next >
Cancel

6 In the **Start IP address** and the **End IP address** text boxes, type the start and end of the IP addresses' range that you want to be distributed to the network.

Range – Is the range of addresses that the scope will distribute across the network. You must use the range provided by your network administrator.

7 In the **Length** text box, type the numeric value of the subnet mask's bits; or in the **Subnet mask** text box, type the subnet mask's IP address.

A subnet mask defines how many bits of an IP address to use for the network/subnet IDs and how many bits to use for the host ID. You can specify the subnet mask by length or as an IP address. You must use the **Length** (or the **Subnet mask**) provided by your network administrator.

8 Click **Next**. The **Add Exclusions** window is displayed.

9 In the **Start IP address** and the **End IP address** text boxes, type the start and end of the IP addresses' range that you want to exclude from the distribution.

You must use the exclusion range provided by your network administrator.

10 Click **Next**. The **Lease Duration** window is displayed.

The DHCP server assigns a client an IP address for a given amount of time. The amount of time for which the IP address can be leased is defined in the **Lease Duration** window.

11 In the **Days**, **Hours and Minutes** text box, type the lease duration.

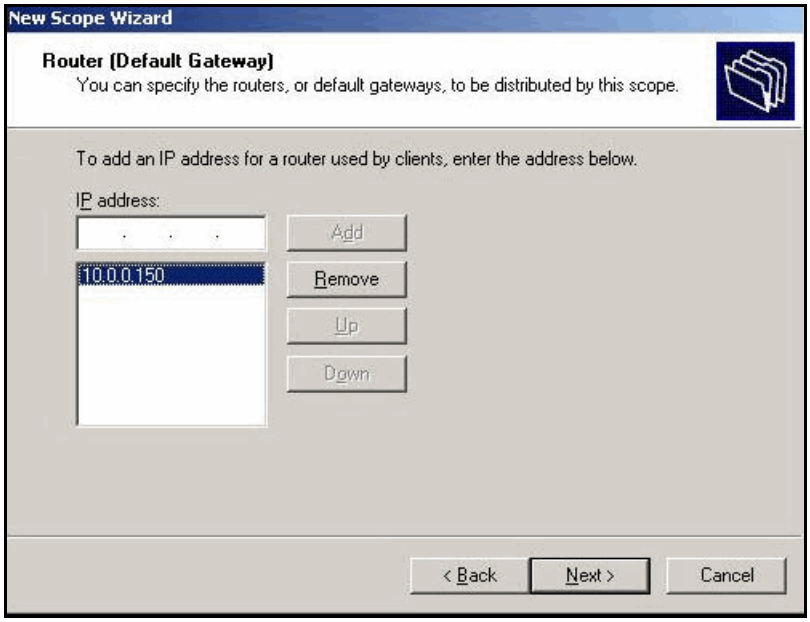
You must use the **Lease Duration** as specified by your network administrator.

12 Click **Next**. The **Configure DHCP Options** window is displayed.

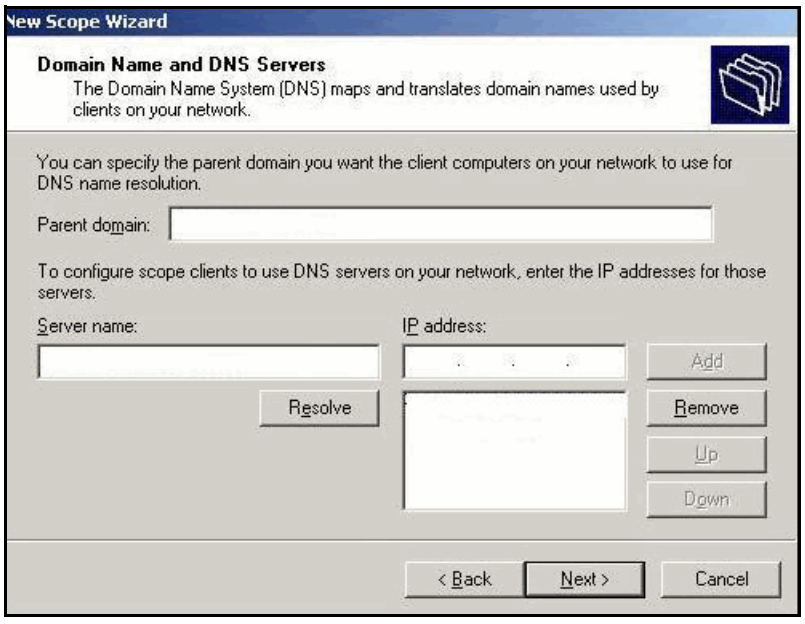
13 Select **Yes, I want to configure these options now**, and then click **Next**. The **Router (Default Gateway)** window is displayed.

14 In the **IP address** text box, type the network's default gateway.

You must use the default gateway provided by your network administrator.



15 Click **Next**. The **Domain Name and DNS Servers** window is displayed.


New Scope Wizard
Domain Name and DNS Servers
The Domain Name System (DNS) maps and translates domain names used by clients on your network.
You can specify the parent domain you want the client computers on your network to use for DNS name resolution.
Parent domain:
To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.
Server name:
IP address:
Add
Resolve
Remove
Up
Down
< Back
Next >
Cancel

16 In the **Parent domain** text box, type your company's domain name.

You must use the **Parent Domain** provided by your network administrator.

17 In the **Server name** text box, type your server name.

You must use the **Server name** provided by your network administrator.

18 In the **IP address** text box, type your server's IP address, and click **Add**.

19 Click **Next**. The **WINS Servers** window is displayed.

20 Click **Next**. The **Activate Scope** window is displayed.

21 Select **Yes, I want to activate this scope now**, and click **Next**. The wizard displays the following message: **This server is now a DHCP server**.

22 Click **Start**, point to **Administrative Tool**, and then click **DHCP**. The DHCP console tree is displayed.

23 Select the scope you configured, and right-click.

24 Select **Configure Options**. The **Server Options** window is displayed.

25 Enable **078 SLP DA**.

26 In the lower pane of the screen, type the hexadecimal values of the SLP DA's IP address.

NOTE

- *The Wireless APs use the SLP DA to discover the Summit WM Controller.*

NOTE

If there is no SLP deployment on the enterprise network, the Summit WM Controller is configured to act as a DA by default. If you put the Summit WM Controller's IP address(es) in a DHCP server for Option 78, Wireless APs will interact with the Summit WM Controller for discovery.

27 Click **Apply,** and then click **OK**.

Configuring DHCP in Red Hat Linux Server

You can configure a DHCP server using the configuration file `/etc/dhcpd.conf`.

DHCP also uses the file `/var/lib/dhcp/dhcpd.leases` to store the client lease database.

The first step in configuring a DHCP server is to create the configuration file that stores the network information for the clients. Global options can be declared for all clients, or options can be declared for each client system.

The configuration file can contain any extra tabs or blank lines for easier formatting. The keywords are not case-sensitive and lines beginning with a hash mark (#) are considered comments.

To use the recommended mode, add the following line to the top of the configuration file:

ddns-update-style interim;

Read the `dhcpd.conf` man page for details about the different modes.

There are two types of statements in the configuration file:

- Parameters – State how to perform a task, whether to perform a task or what networking configuration options to use to send to the client.
- Declarations – Describe the topology of the network, describe the clients, provide addresses for the clients, or apply a group of parameters to a group of declarations.

Some parameters must start with the option keyword and are referred to as options. Options configure DHCP options; whereas, parameters configure values that are not optional or control how the DHCP server behaves.

Parameters (including options) declared before a section enclosed in curly brackets {} are considered global parameters. Global parameters apply to all the sections below it.

NOTE

If you change the configuration file, the changes will not take effect until you restart the DHCP daemon with the command `service dhcpd restart`.

The following is the example of DHCP configuration on a Red Hat Linux Server.

For Wireless AP subnet

```
subnet 10.209.0.0 netmask 255.255.255.0 {
    option routers 10.209.0.2; ### This is the network's default gateway
    address.
    option subnet-mask 255.255.255.0
    option domain-name xyznetworks.ca
    option domain-name servers 192.168.1.3, 207.236, 176.11
    range 10.209.0.3 10.209.0.40;
    default-lease-time 7200000 ###The figures are in seconds.
    option slp-directory-agent true 10.209.0.1, 10.209.0.3; ####The Wireless
    APs use the SLP DA to discover the Summit WM Controller, and the Mobility
    Agents use it to discover the Mobility Manager.
    authoritative;
    }
```

For WM-AD subnets (In Summit WM Controller it is configured as Use DHCP Relay)

if you are utilizing multiple WM-ADs you must configure the Red Hat Linux server for every WM-AD.

The following is the example of DHCP configuration in Red Hat Linux for two WM-ADs (For more information, see Chapter 7, "WM-AD configuration.").

```
subnet 172.29.31.0 netmask 255.255.255.224

        option routers 172.29.31.1; #### This is the WM-AD 1 gateway.
        option subnet-mask 255. 255. 255.0
        option domain-name toronto.xyznetworks.com";
        option domain-name-servers 192.1.1.3;
        range 172.29.31.2 172.29.31.30;
        default-lease-time 36000;
        max-lease-time 7200000;###The figures are in seconds.
        authoritative;

}
```

```
subnet 172.29.2.0 netmask 255.255.255.224

        option routers 172.29.2.1; #### This is the WM-AD 2 gateway.
        option subnet-mask 255. 255. 255.0
        option domain-name toronto.xyznetworks.com";
        option domain-name-servers 192.1.1.3;
        range 172.29.2.2 172.29.2.30;
        default-lease-time 36000;
        max-lease-time 7200000;###The figures are in seconds.
        authoritative;

}
```

IAS service configuration

Microsoft Internet Authentication Service (IAS) can run as a Remote Authentication Dial-in User Service (RADIUS) server. You can use IAS for centralized authentication and accounting of multiple client devices.

IAS configuration involves the following steps:

- Step 1 – "Installing IAS on Windows 2003 Server" on page 46
- Step 2 – "Enabling IAS to authenticate users in active directory" on page 46
- Step 3 – "Configuring IAS properties" on page 47
- Step 4 – "Configuring Summit WM Controller as IAS client" on page 49
- Step 5– "Configuring Remote Access Policies" on page 50

Installing IAS on Windows 2003 Server

You must install IAS on Windows 2003 Server according to the documentation provided with the server. You may also visit http://support.microsoft.com to learn how to install IAS on Windows 2003.

Enabling IAS to authenticate users in active directory

To enable IAS to authenticate users in active directory:

1 Click **Start**, point to **Programs**, point to **Administrative Tools**, and then click **Internet Authentication Service**.

2 In the **Action** menu, click **Register Service in Active Directory**.

3 To confirm the IAS registration in the local domain, click **OK**.

Configuring IAS properties

To configure the IAS properties:

1 Click **Start**, point to **Programs**, point to **Administrative Tools**, and then click **Internet Authentication Service**.

2 Right-click **Internet Authentication Service (Local)**, and then click **Properties**.

3 In the **Description** text box, type a name that you want to assign to this IAS server.

4 If you do not want to record the rejected authentication requests, clear the **Log rejected or discarded authentication requests** checkbox.

NOTE

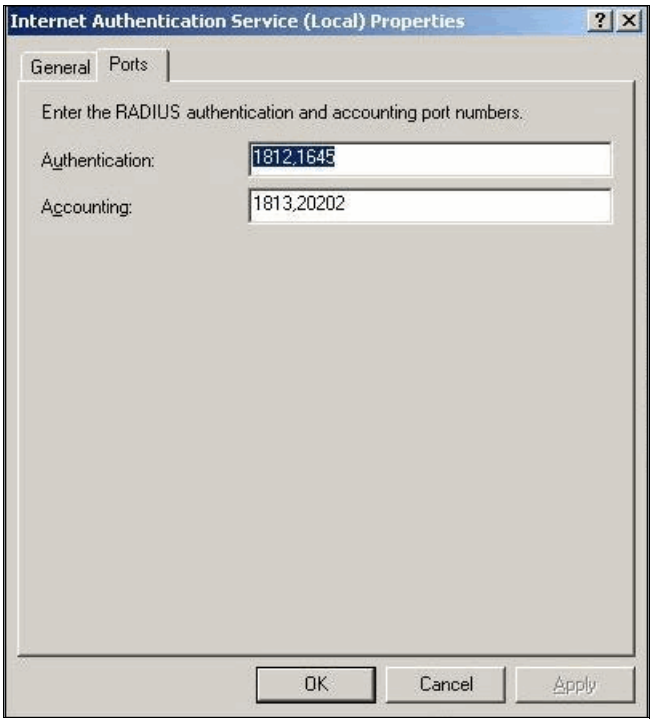
You can use the log file to determine if unauthorized users are attempting to authenticate themselves in the domain.

5 If you do not want to record the successful authentication requests, clear the **Log successful authentication requests** checkbox.

NOTE

You can use the log file to determine the usage patterns of wireless users.

6 Click the **Ports** tab.

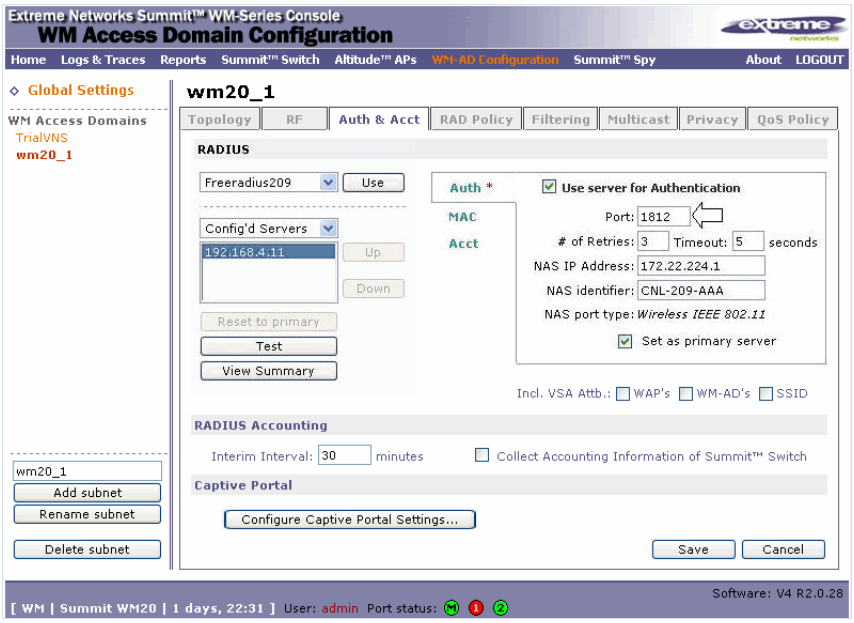


7 In the **Authentication** text box, type the Summit WM Controller's port # that is used to access the authentication (IAS) service.

8 In the **Accounting** text box, type the Summit WM Controller's port # that is used to access the accounting service.

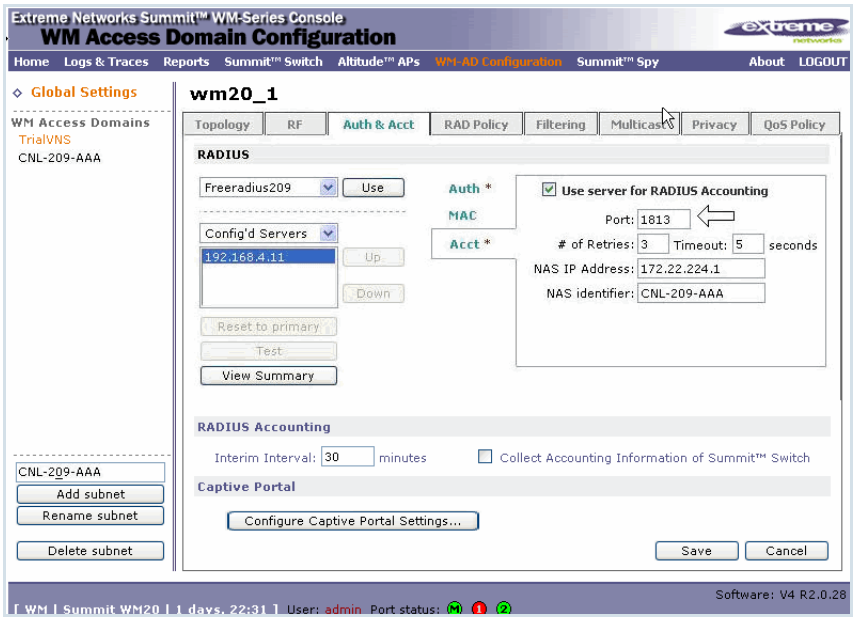
NOTE

*The values you type in the **Authentication** text box should match the value that you define in the **Port** text box of **Auth** section on the **Auth & Acct** tab of Summit WM Controller's WM-AD screen. For more information, see "Configuring authentication mechanism for WM-AD" on page 73 of Chapter 7, "WM-AD configuration."*



NOTE

Similarly, the values you type in the Accounting text box, should match the value that you define in the Port text box of Acct section in the Acc & Acct tab of Summit WM Controller's WM-AD screen.For more information, see "Configuring authentication mechanism for WM-AD" on page 73 of Chapter 7, "WM-AD configuration."



Configuring Summit WM Controller as IAS client

To configure Summit WM Controller as IAS client:

1 Click **Start**, point to **Administrative Tool**, and then click **Internet Authentication Service**.

2 Right-click **Clients**, and then **New Client**.

3 In the **Friendly name** text box, type the name that you want to assign to the Summit WM Controller, and then click **Next**.

4 In the **Client address** (**IP or DNS**) text box, type the IP address of the Summit WM Controller, and then click **Verify**.

5 Click **Resolve**. If the IP address is correct, it appears in the **Search results** text box.

6 Click **Use this IP**.

7 In the **Client-Vendor** list, click **RADIUS Standard**.

8 In the **Shared secret** text box, type a password that both the IAS server and the Summit WM Controller will use to mutually authenticate.

NOTE

This password is case-sensitive. You can use alphanumeric characters. You must configure the same shared ***secret password*** *for WM-AD Global Settings. For more information, see "WM-AD Global Settings" in the* Summit WM20 User Guide.

9 Retype the password in the **Confirm shared secret** box, and then click **Finish**.

Configuring Remote Access Policies

To configure Remote Access Policy:

1 Click **Start**, point to **Administrative Tool**, and then click **Internet Authentication Service**.

2 Click **Remote Access Policies**.

3 In the right pane of the **Internet Authentication Service**, click **Allow access if dial-in permission is enabled**, and then right-click **Allow access if dial-in permission is enabled**.

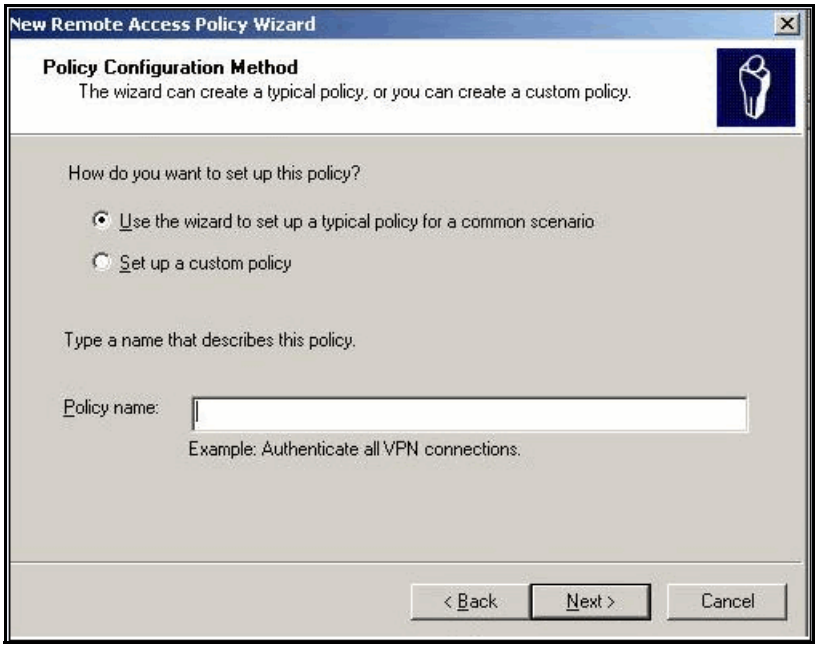
4 Click **Delete**. A dialogue box is displayed.

5 Click **Yes** on the dialogue box.

6 On the **Action** menu, click **New Remote Access Policy**. The **New Remote Access Policy Wizard** is displayed.

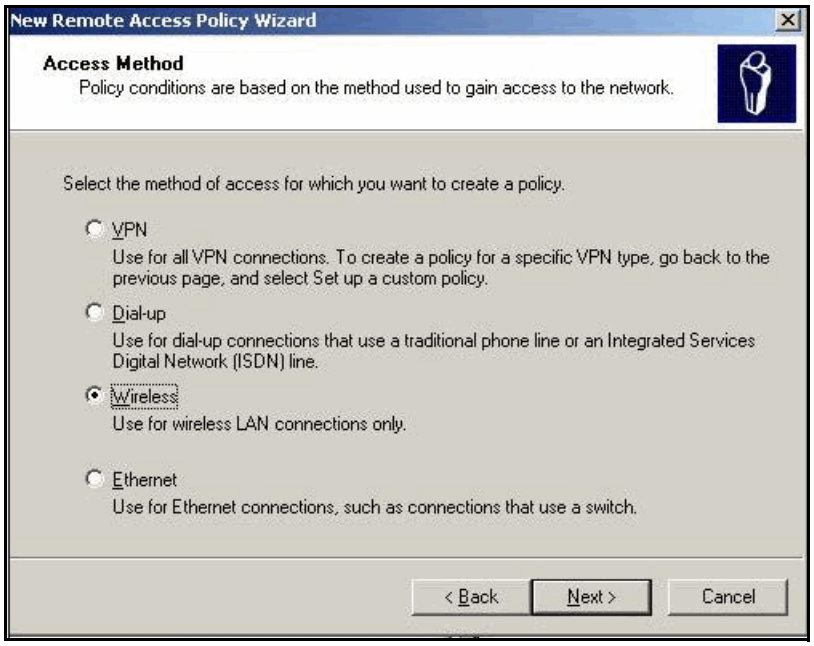
New Remote Access Policy Wizard
Welcome to the New Remote Access Policy Wizard
This wizard helps you set up a remote access policy, which is a set of conditions that determine which connection requests are granted access by this server.
To continue, click Next.
< Back
Next >
Cancel

7 Click **Next**. The **Policy Configuration Method** window is displayed.

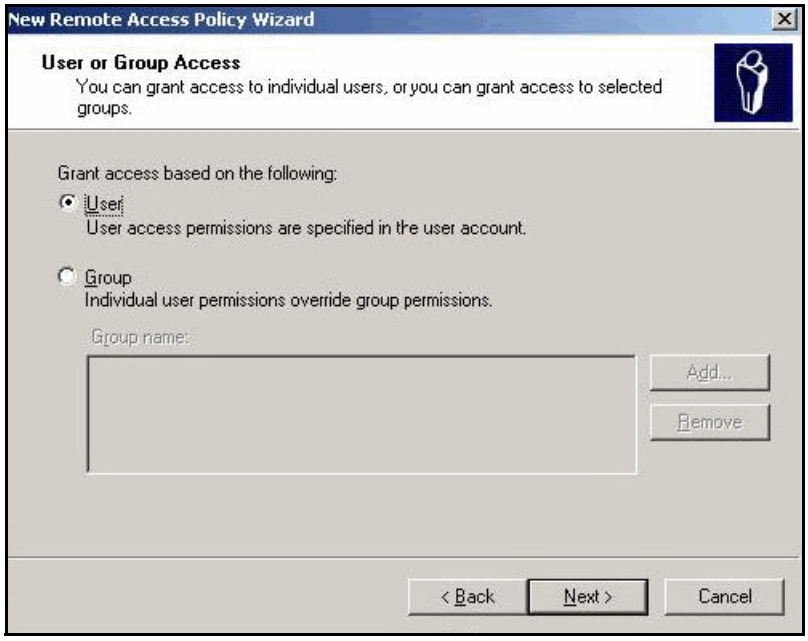

New Remote Access Policy Wizard
Policy Configuration Method
The wizard can create a typical policy, or you can create a custom policy.
How do you want to set up this policy?
Use the wizard to set up a typical policy for a common scenario
Set up a custom policy
Type a name that describes this policy.
Policy name:
Example: Authenticate all VPN connections.
< Back
Next >
Cancel

8 Select **Use the wizard to set up a typical policy for a common scenario**.

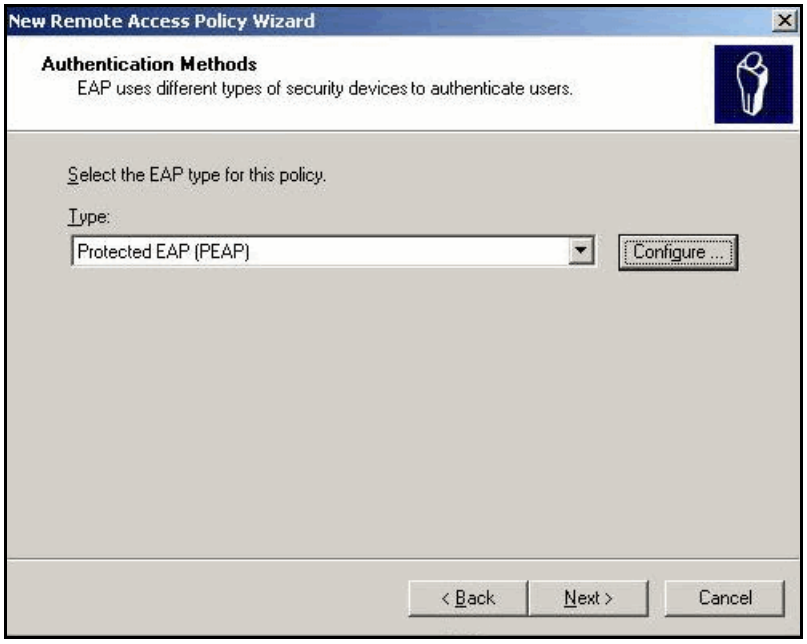
9 In the **Policy name** text box, type the name you want to assign to the policy, and then click **Next**. The **Access Method** window is displayed.


New Remote Access Policy Wizard
Access Method
Policy conditions are based on the method used to gain access to the network.
Select the method of access for which you want to create a policy.
VPN
Use for all VPN connections. To create a policy for a specific VPN type, go back to the previous page, and select Set up a custom policy.
Dial-up
Use for dial-up connections that use a traditional phone line or an Integrated Services Digital Network (ISDN) line.
Wireless
Use for wireless LAN connections only.
Ethernet
Use for Ethernet connections, such as connections that use a switch.
< Back
Next >
Cancel

10 Select **Wireless** and then click **Next**. The **User or Group Access** window is displayed.


New Remote Access Policy Wizard
User or Group Access
You can grant access to individual users, or you can grant access to selected groups.
Grant access based on the following:
User
User access permissions are specified in the user account.
Group
Individual user permissions override group permissions.
Group name:
Add...
Remove
< Back
Next >
Cancel

11 Select **User** or **Group**, and click **Next**. The **Authentication Methods** window is displayed.



12 Select **Protected EAP (PEAP)** or **Smart card or other certificate**, and click **Next**.

13 Click **Finish**. The new policy is displayed in the right pane.

14 In the right pane, select and right-click the newly configured remote access policy.

15 Select **Properties**. The **Properties** window is displayed.

16 Select **Grant Remote Access Permission**.

17 Click **Apply** and then click **OK**.

18 Click **Add**. The **Attributes** window is displayed.

19 Select **IP address**. The **Client IP-Address** window is displayed.

20 In the **Client IP-Address** window, type the Summit WM Controller's IP address.

21 Click **OK**.

DNS service configuration

The domain name system (DNS) stores and associates many types of information with domain names, but most importantly, it translates domain names (computer hostnames) to IP addresses.

You must install DNS on Windows 2003 Server according to the documents provided with the server. Visit http://support.microsoft.com to learn how to install DNS on Windows 2003.

The DNS configuration involves two steps:

- Step 1 – Configuring the DNS for internet access
- Step 2 – Configuring DNS for Wireless APs discovery.

Configuring DNS for internet access

To configure DNS for internet access:

1 Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **Configure Your Server Wizard**.

2 Click **Next**. The **Summary of Selections** window is displayed.

NOTE

The Summary of Selections window should list the following two items: ***Install DNS*** *and* ***Run the Configure a DNS Wizard to configure DNS****.*
If the Summary of Selections window does not list these two items, you must:
- *Click* ***Back*** *to return to* ***DNS Server Roles*** *window.*
- *Click* ***DNS****.*
- *Click* ***Next****.*

3 In the **Summary of Selections** window, click **Next**. The **Select Configuration Action** window is displayed.

When the **Configure Your Server** wizard installs the DNS service, it first determines whether the IP address for this server is static or the server is configured to secure it automatically.

If your server is currently configured to obtain its IP address, the wizard prompts you to configure the server with a static IP address instead of displaying the **Select Configuration Action** window.

To configure the server with a static IP address:

a In the **Local Area Connection Properties**, click **Internet Protocol** (TCP/IP), and then click **Properties**. The **Internet Protocol (TCP/IP) Properties** window is displayed.

b In the **Internet Protocol (TCP/IP) Properties** window, click **Use the following IP address**.

c In the **Static IP address**, **Subnet mask**, and the **Default gateway** text boxes, type the static IP address, the subnet mask and the IP address of the default gateway respectively.

d In the **Preferred DNS** text box, type the IP address of the server.

e In the **Alternate DNS** text box, type the IP address of another internal DNS server.

The **Alternate DNS** text box is optional.

f Click **OK**, and then click **Close**.

4 In the **Select Configuration Action** window, select the **Create a forward lookup zone** checkbox, and then click **Next**. The **Primary Server Location** window is displayed.

5 In the **Primary Server Location** window, select **This server maintains the zone**, and then click **Next**. The **Zone name** window is displayed.

6 In the **Zone name** text box, type the name of the **DNS zone for your network**, and then click **Next**. The **Dynamic Update** window is displayed.

The zone name is identical to the DNS domain for small organization or branch office.

7 In the **Dynamic Update** window, click **Allow both nonsecure and secure dynamic updates**, and then click **Next**. The **Forwarders** window is displayed.

8 In the **Forwarders** window, click **Yes, it should forward queries to DNS servers with the following IP addresses**.

When you select this feature, all DNS queries for DNS names are forwarded to a DNS at either your ISP or central office.

9 In the **IP addresses** text box, type one or more IP addresses that either your ISP or central office DNS servers use, and click **Next**.

10 Click **Finish**. The wizard displays the following message: **This server is Now a DNS Server**.

Configuring DNS for Wireless APs discovery

To configure DNS for Wireless APs discovery:

1 Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **DNS**.

2 Select the domain.

3 In the **Action** menu, select **New Domain**. The **New DNS Domain** window is displayed.

4 In the **New DNS Domain** window, type the name for the new domain.

5 Restart the service. The new domain is displayed as the child domain.

6 Right-click the new domain name, and select **New Host**. The **New Host** window is displayed.

New Host
Name (uses parent domain name f blank):
Fully qualified domain name (FQDN):
IP address:
Create associated pointer (PTR) record
Allow any authenticated user to update DNS records with the same owner name
Add Host
Cancel

7 In the **Name** text box, type the Summit WM Controller's name.

8 In the **IP address** text box, type the Summit WM Controller's IP address.

9 Select **Create associated pointer (PTR) record** checkbox.

10 Click **Add Host**. The new host is displayed in the right pane of the screen.

11 Quit DNS.

Now you must configure the Wireless APs via the Summit WM Controller.

6 Wireless AP's configuration

This chapter describes how to configure and manage the Wireless APs.

The topics in this chapter are organized as follows:

- "Wireless AP overview" on page 57
- "Configuring the Wireless APs for the first time" on page 57
- "Assigning names to Wireless APs" on page 60
- "Modifying Wireless APs' properties" on page 60
- "Configuring static IP address for Wireless APs" on page 61
- "Configuring VLAN tags for Wireless APs" on page 64
- "Wireless AP's LED states" on page 65

Wireless AP overview

Wireless APs bridge network traffic between wireless devices and the Ethernet LAN.

The Wireless APs, by default, do not have a graphical user interface (GUI); they are configured and managed by the Summit WM GUI. In addition, you can centrally manage (verify and upgrade) the Wireless AP firmware image via the Summit WM GUI.

All communication with the Summit WM Controller is carried out using a UDP-based protocol. The protocol encapsulates the IP traffic from the Wireless AP and directs it to the Summit WM Controller. The Summit WM Controller decapsulates the packets and routes them to the appropriate destinations while managing sessions and applying policy.

The Wireless APs are available in two models:

- Altitude 350-2i– Equipped with dual internal (multimode) diversity antennas.
- Altitude 350-2d – Equipped with dual external antennas that use RP-SMA connectors.

The Wireless APs have two radios:

- 2.4 GHz radio supporting the 802.11b/g standards
- 5 GHz radio supporting the 802.11a standard

The radios on the Wireless APs are enabled or disabled through the Summit WM GUI. For more information, see the Chapter 3 of the *Summit WM20 User Guide*.

Configuring the Wireless APs for the first time

Before you start configuring the Wireless APs, ensure that you have:

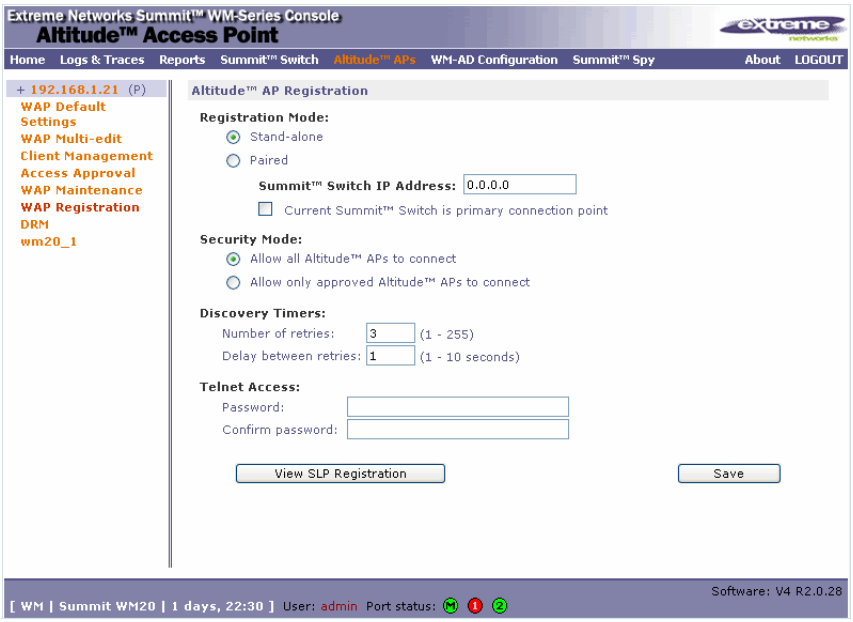
- Set-up, installed and configured the Summit WM Controller.

- Installed the Wireless APs at the location indicated by your site survey.

To configure the Wireless APs for the first time:

1 From the main menu, click **Altitude AP**s. The **Altitude AP** screen is displayed.

2 In the left pane, click **WAP Registration**.



3 In the **Security Mode** section, select one of the following options:

NOTE

Security mode is a Summit WM Controller property. It defines how the Summit WM Controller behaves when registering new devices. During the registration process, the Summit WM Controller's approval of the Wireless APs depends on the security mode that has been set.

- Allow all **Altitude AP**s to connect:
  - If the Summit WM Controller does not recognize the registering serial number, a new registration record is automatically created for the Wireless AP. The Wireless AP receives a default configuration.
  - If the Summit WM Controller recognizes the serial number, it indicates that the registering device is pre-registered with the Summit WM Controller. The Summit WM Controller uses the existing registration record, and existing configuration record to authenticate and configure the Wireless AP respectively.
- **Allow only approved Altitude APs to connect**:
  - If the Summit WM Controller does not recognize the Wireless AP, the Wireless AP's registration record is created in pending state. You must manually approve a pending Wireless AP. As long as the Wireless AP is in pending state, it receives minimum configuration that only allows it to maintain an active link with the Summit WM Controller for future state change. For more information, see "Manually approving pending Wireless APs" on page 59.
  - If the Summit WM Controller recognizes the serial number, it uses the existing registration record to authenticate the Wireless AP. Following the successful authentication, the Wireless AP is configured according to its stored configuration record.

4 In the **Discovery Timers** section, type the discovery timer values in the following text boxes:
   - Number of retries – Limited to 255 in a five minute discovery period. The default value is 3.
   - **Default between retries** – The default value is 1 second.

5 To save your changes, click **Save**.

6 To initiate the discovery and registration process, connect the Wireless AP to a power source.

   The Wireless APs can be connected and powered in the following ways:
   - Power over Ethernet (802.3af):
     - PoE enabled with port
     - PoE Injector
   - Power by AC adaptor

   For more information, see the *Wireless AP Installation Guide*.

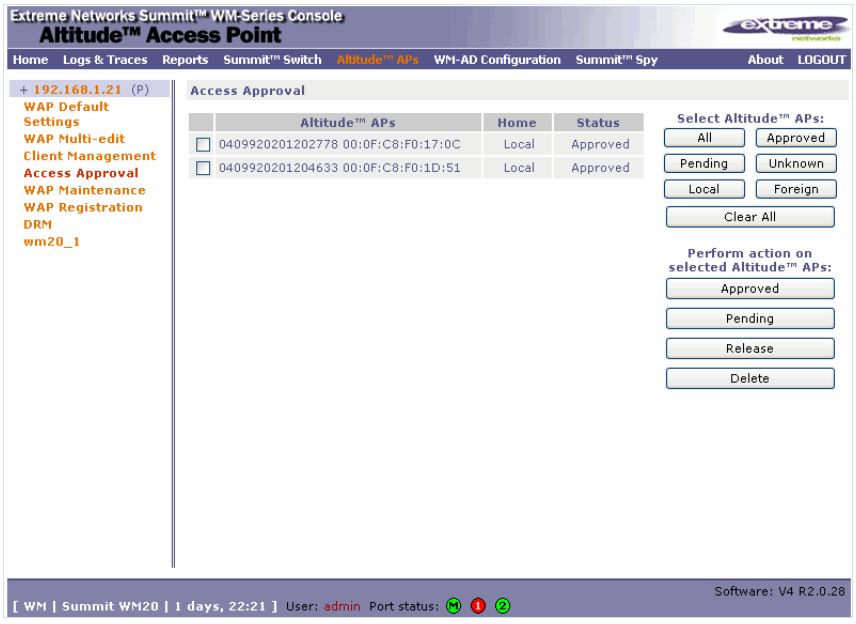
Manually approving pending Wireless APs

If the Summit WM Controller does not recognize the Wireless AP, the Wireless AP's registration record is created in pending state. You must manually approve a pending Wireless AP. As long as the Wireless AP is in pending state, it receives minimum configuration that only allows it to maintain an active link with the Summit WM Controller for future state change.

To manually approve pending Wireless APs:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed

2 In the left pane, click **Access Approval**. The **Access Approval** screen is displayed.



3 In the **Select Altitude APs** section, click **Pending**. The pending Wireless APs are selected.

4 In the **Perform action on selected Altitude APs**, click **Approved**. The state of the selected Wireless APs is changed from "Pending" to "Approved".

Assigning names to Wireless APs

After the Wireless APs are successfully registered, you can assign them appropriate names.

To assign a name to a Wireless AP:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed.

2 In the **Wireless AP** list, click the **Wireless AP** for which you want to assign a name. The **AP Properties** tab is displayed.

3 In the **Name** text box, type the name that you want to assign to the selected Wireless AP.

4 To save your changes, click **Save**.

NOTE

*You can modify the Wireless AP's properties that are displayed in the right pane of the **Wireless AP** screen. For more information, see "Modifying Wireless APs' properties" on page 60.*

Modifying Wireless APs' properties

After the Wireless APs are successfully registered, you can modify their properties.

To assign a name to a Wireless AP:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed.

2 In the **Wireless AP** list, click the **Wireless AP** for which you want to modify the properties. The **AP Properties** tab is displayed.

The AP Properties displays the following properties:

- **Name** – By default, this text box contains the serial number of the Wireless AP.
- **Description** – Short description of the Wireless AP.
- **Port #** – Summit WM Controller's ethernet port to which the Wireless AP is connected.
- **Poll Timeout** – The timeout value for polling the Summit WM Controller. The value is in seconds. The default value is 10 seconds.
- **Poll Interval** – The time interval during which the polling will occur. The value is in seconds. The default value is two seconds.
- **Telnet Access** – A feature you must select if the Telnet access to the Wireless AP is enabled, or deselect if the Telnet access to the Wireless AP is disabled.
- **Maintain client session in event of poll failure** – Select this option, if you want the Wireless AP to remain active in case the link with the Summit WM Controller is lost. This allows service for the branch WM-ADs to continue during temporary network outages.
- **Restart service in the absence of controller** – Select this option (if using a bridged at AP WM-AD) to ensure that the Wireless APs continue providing service even if their connectivity to the Summit WM Controller is lost.
- **User Broadcast for disassociation** – If you want the Wireless AP to use broadcast disassociation when disconnecting all wireless devices instead of disassociating each client one by one, you must select this feature. This feature is disabled by default.
- **Country** – Where the Wireless AP operates.

3 To save your changes, click **Save**.

The following properties are view only on the **AP Properties** tab:

- **Serial #** – A unique identifier that is assigned during the manufacturing process of the Wireless APs.
- **Hardware Version** – The current version of the Wireless AP hardware.
- **Application Version** – The current version of the Wireless AP software.
- **Status** – The Wireless AP state:
  - **Approved** – Indicates that the Wireless AP has received its binding key from the Summit WM Controller in the discovery process.
  - **Pending** – Indicates that the Wireless AP has not been approved as yet to access the Summit WM Controller. Pending Wireless APs will not provide service to client devices until they are approved.
- **Active Clients** – The number of wireless devices that are currently active on the Wireless AP.

4 Modify other properties according to your needs.

5 To save your changes, click **Save**.

Configuring static IP address for Wireless APs

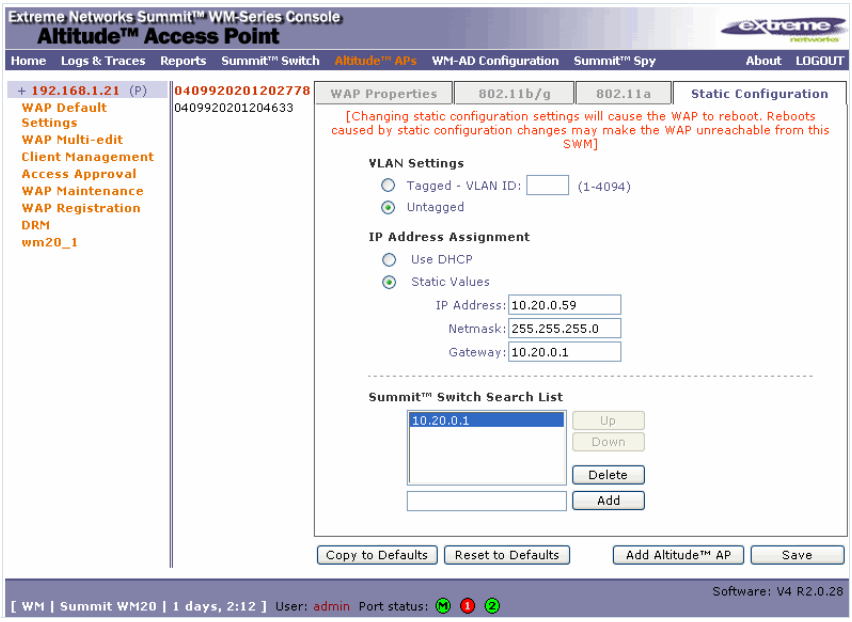
Wireless AP static configuration can be used in both central office and branch office deployments. In order to ensure that the static IP configuration is done correctly, you must use the DHCP initially to obtain an IP address for the Wireless AP. Then use these values in the static IP address configuration.

- **Step 1** – Use the DHCP Server to acquire the IP address
- **Step 2** – Configure the acquired IP address (or any other assigned IP address) as the Static IP address for the Wireless AP.

To configure a static IP address for the Wireless AP:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed.

2 Click the **Static Configuration** tab. The **Static Configuration** screen is displayed.



3 In the **IP Address Assignment** section, select **Use DHCP.**

4 In the **Add** text box, type the IP address of the Summit WM Controller that will manage this Wireless AP.

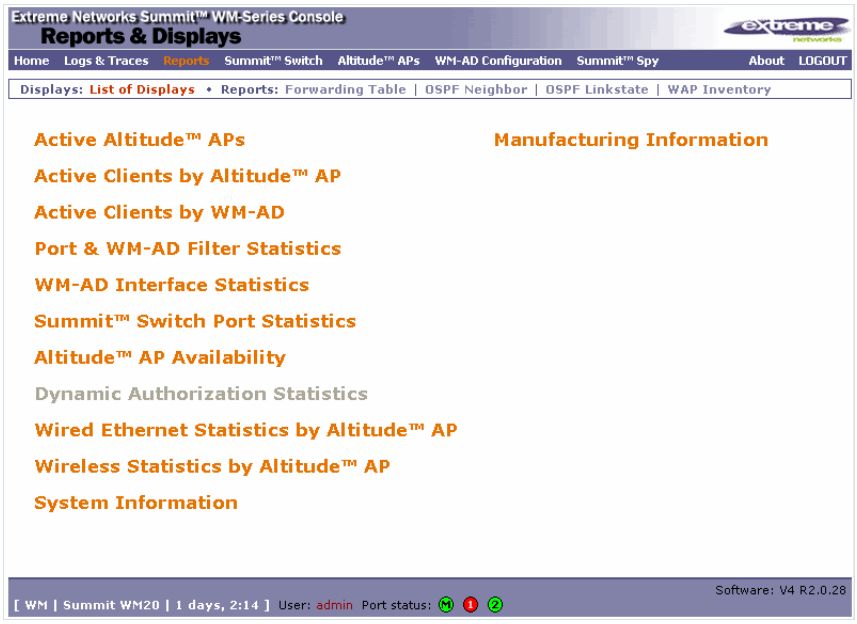
5 Click **Add**. The IP address is added to the list.

6 Repeat Steps 4 to 5 to add additional Summit WM Controllers.

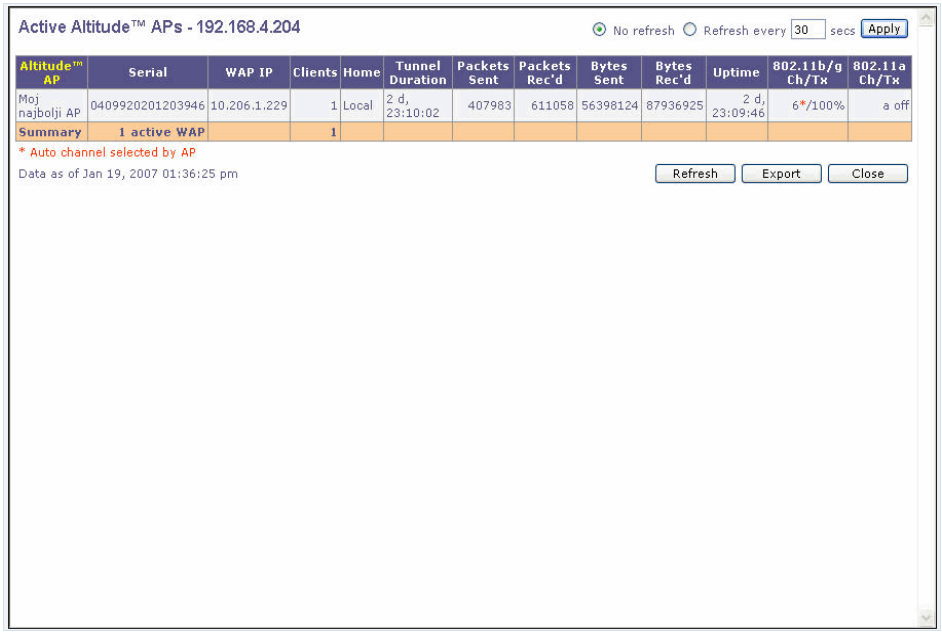
The Wireless AP attempts to connect to the IP addresses (of the Summit WM Controllers) in the order in which they are listed in the **Summit Switch Search List**. This feature allows the Wireless AP to bypass the discovery process. If the **Summit Switch Search List** is not populated, the Wireless AP will use SLP to discover a Summit WM Controller.

7 To save your changes, click **Save**. The Wireless AP reboots.

8 From the main menu, click **Reports**. The **Reports and Displays** screen is displayed.


Extreme Networks Summit™ WM-Series Console
Reports & Displays
Home Logs & Traces Reports Summit™ Switch Altitude™ APs WM-AD Configuration Summit™ Spy About LOGOUT
Displays: List of Displays • Reports: Forwarding Table | OSPF Neighbor | OSPF Linkstate | WAP Inventory
Active Altitude™ APs
Active Clients by Altitude™ AP
Active Clients by WM-AD
Port & WM-AD Filter Statistics
WM-AD Interface Statistics
Summit™ Switch Port Statistics
Altitude™ AP Availability
Dynamic Authorization Statistics
Wired Ethernet Statistics by Altitude™ AP
Wireless Statistics by Altitude™ AP
System Information
Manufacturing Information
Software: V4 R2.0.28
[WM | Summit WM20 | 1 days, 2:14] User: admin Port status:

9 Click **Active Wireless APs**. A list of active Wireless APs is displayed with the corresponding IP addresses assigned to them by the DHCP server.


Active Altitude™ APs - 192.168.4.204
No refresh Refresh every 30 secs Apply
Altitude™ AP | Serial | WAP IP | Clients | Home | Tunnel Duration | Packets Sent | Packets Rec'd | Bytes Sent | Bytes Rec'd | Uptime | 802.11b/g Ch/Tx | 802.11a Ch/Tx
Moj najbolji AP | 040992020120394 6 | 10.206.1.229 | 1 | Local | 2 d, 23:10:02 | 407983 | 611058 | 56398124 | 87936925 | 2 d, 23:09:46 | 6*/100% | a off
Summary | 1 active WAP | 1
* Auto channel selected by AP
Data as of Jan 19, 2007 01:36:25 pm
Refresh Export Close

10 Locate the Wireless AP for which you are configuring the static IP address in the list, and the corresponding IP address.

11 From the main menu, click **Altitude AP**s. The **Altitude AP** screen is displayed.

12 Click the **Static Configuration** tab.

13 In the **IP Address Assignment** section, select **Static Values**.

14 In the **IP Address** text box, type the IP address that you obtained by using the DHCP server (or any other assigned IP address).

15 In the **Netmask** text box, type the appropriate subnet mask to separate the network portion from the host portion of the address.

16 In the **Gateway** text box, type the default gateway of the network.

NOTE

*The value in the **Port** text box is 'read-only'.*

17 To save your changes, click **Save**. The Wireless AP reboots.

Configuring VLAN tags for Wireless APs

You must exercise caution while configuring VLAN ID tag. If a VLAN tag is not configured properly, the connectivity between the Summit WM Controller and the Wireless AP will be lost.

NOTE

To configure the VLAN tag for Wireless AP, you must connect the Wireless AP to a point on the central office network that does not require VLAN tagging. If the VLAN tagging is configured correctly and you are still on the central office network, the Wireless AP will lose connection with the Summit WM Controller after it is rebooted (the Wireless AP reboots when the configuration settings are saved). If the Wireless AP does not lose connection with the Summit WM Controller after the reboot, it indicates that the VLAN ID has not been configured correctly. This provides a feedback on whether you have configured the VLAN tag correctly. After the VLAN is configured correctly, you can move the Wireless AP to the target location.

To configure Wireless APs with a VLAN tag:

1 Connect the Wireless AP in the central office to the Summit WM Controller port (or to a network point) that does not require VLAN tagging.

2 In the **VLAN Settings** section, select **Tagged - VLAN ID**.

3 In the **Tagged - VLAN ID** text box, type the VLAN ID on which the Wireless AP will operate.

4 To save your changes, click **Save**. The Wireless AP reboots and loses connection with the Summit WM Controller.

5 Log out from the Summit WM Controller.

6 Disconnect the Wireless AP from the central office network and move it to the target location.

7 Power the Wireless AP. The Wireless AP connects to the Summit WM Controller.

If the Wireless AP does not connect to the Summit WM Controller, it implies that the Wireless AP was not configured properly. To recover from this situation, you must reset the Wireless AP to its factory default settings, and reconfigure the static IP address. For more information, see "Resetting the Wireless AP to its factory default settings" on page 64.

Resetting the Wireless AP to its factory default settings

You can reset the Wireless AP to its factory default settings if the Wireless APs were incorrectly configured.

The Wireless AP boot-up sequence includes a random delay interval, followed by a vulnerable time interval. During the vulnerable time interval (2 seconds), the LEDs flash in a particular sequence to

indicate that the Summit WM Controller is in the vulnerable time interval. For more information, see "Wireless AP's LED states" on page 65.

If you power up the Wireless AP and interrupt the power during the vulnerable time interval three consecutive times, the fourth time the Wireless AP reboots, it will restore its factory defaults including the user password and the default IP settings.

To reset the Wireless AP to its factory default settings:

1 Reboot the Wireless AP.

2 Depower and repower the Wireless AP during the vulnerable time interval.

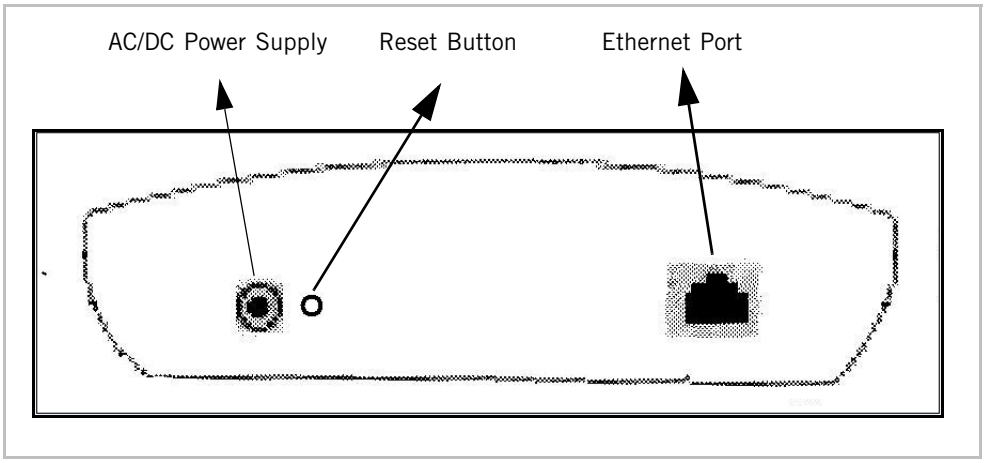
3 Repeat Step 2 two more times.

When the Wireless AP reboots for the fourth time, after having its power supply interrupted three consecutive times, it restores its factory default settings. The Wireless AP then reboots again to put the default settings into effect.

Reset button (Hardware)

You can also reset the Wireless AP to its factory default settings by pressing and holding the **Reset** button on the Wireless AP for approximately five seconds. Not all models of the Wireless APs have the **Reset** button

The following figure illustrates the location of the **Reset** button on the Wireless APs.



Wireless AP's LED states

When the Wireless AP is powered on and boots, you can follow its progress through the registration process by observing the LED sequence described below.

The Status LED (center) also indicates power — unlit when unit is off, and green (solid) when the Wireless AP has completed discovery and is operational.

Figure 9: Wireless AP LEDs

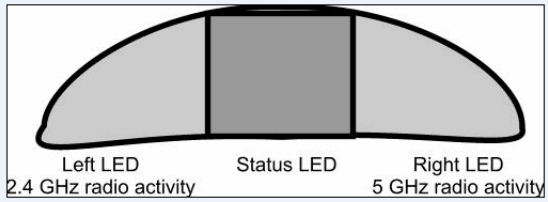


Table 2: Wireless AP LED status

Left LED Status	Center LED Status	Right LED Status	Wireless AP status
Off	Off	Off	Powered-off
Off	Green	Off	Beginning of Power-on-Self-Test (POST) (0.5 seconds)
Off	Off	Off	Power-on-Self-Test (POST
Off	Red	Off	Failure during POST
Green	Off	Green	Random delay – State displayed only after a vulnerable reset
Green/Off	Off/Green	Green/Off	Vulnerable time interval – The Wireless AP resets to factory default if powered-off for three consecutive times during this state. No vulnerable period when Wireless AP is resetting to factory defaults.
Green/Off/Off	Off/Green/Off	Off/Off/Green	Resetting to factory defaults announcement – replaces vulnerable period. This pattern is repeated twice to notify the operator when the factory configuration is restored.
Off	Orange (Green + Red)	Off	Attempting to obtain an IP address via DHCP.
Off	Red/Orange	Off	No DHCP reply has been received.
Off	Green/Orange	Off	Failed discovery (SLP)
Off	Off/Orange	Off	Summit WM Controller has been discovered. Registering the Wireless AP.
Off	Off/Red	Off	Registration of the Wireless AP has failed.
Off	Off/Green	Off	Standby, registered with a Summit WM Controller, waiting for configuration.
Green when 802.11 b/g enabled. Off otherwise.	Green	Green when 802.11a enabled. Off otherwise	Radios enabled per user settings.
Off	Red/Green	Off	Upgrading firmware.

NOTE

Random delays do not occur during normal reboot. A random delay only occurs after vulnerable period power-down.

Now you should configure the WM-AD via the Summit WM Controller using the Summit WM GUI. The following chapter explains how to configure the WM-AD.

7 WM-AD configuration

This chapter explains how to configure the WM-AD through the Summit WM Controller using the Summit WM GUI.

The topics in this chapter are organized as follows:

- "WM-AD topology overview" on page 67
- "Creating and configuring a Routed WM-AD" on page 68
- "Creating and configuring a Bridge Traffic Locally at WM WM-AD" on page 71
- "Creating and configuring a Bridge Traffic Locally at AP WM-AD" on page 71
- "Assigning Wireless APs' radios to WM-AD" on page 72
- "Configuring authentication mechanism for WM-AD" on page 73
- "Configuring filtering rules" on page 81
- "Configuring privacy for WM-AD" on page 84

WM-AD topology overview

Summit WM Controller, Access Points and Software system provides a versatile means of mapping wireless networks to the topology of an existing wired network. This is accomplished through the assignment of WM Access Domain Services.

When you set up WM Access Domain Services (WM-AD) on the Summit WM Controller, you are defining subnets for groups of wireless users. This WM-AD definition creates a virtual IP subnet where the Summit WM Controller acts as a default gateway for wireless devices.

This technique enables policies and authentication to be applied to the groups of wireless users on a WM-AD, as well as the collecting of accounting information on user sessions that can be used for billing.

When a WM-AD is set up on the Summit WM Controller:

- One or more Wireless APs (by radio) are associated with it
- A range of IP addresses is set aside for the Summit WM Controller's DHCP server to assign to wireless devices

If routing protocol is enabled, the Summit WM Controller advertises the WM-AD as a routable network segment to the wired network, and routes traffic between the wireless devices and the wired network.

Each radio on a Wireless AP can participate in up to eight WM-ADs, via the multi-SSID function.

The WM-AD topologies are classified on the basis of the following WM-AD types:

- **Routed WM-AD** – The user traffic is tunneled to the Summit WM Controller. This is the default set-up.
- **Bridge at the APWM-AD (Bridge Traffic Locally at AP)** – The user traffic is directly bridged with VLAN at the AP's point of access (switch port).

- **VLAN bridged WM-AD (Bridge Traffic Locally at SWM)** – The user traffic is tunneled to the Summit WM Controller and is directly bridged with it to a specific VLAN.

SSID and AAA determine the WM-AD network assignment. These network assignments define a framework for carrying out the authentication of the mobile devices.

Creating a new WM-AD involves the following three steps:

1 Assigning a name to the proposed WM-AD

2 Defining the topology parameters

3 Assigning Wireless AP's radios to WM-AD

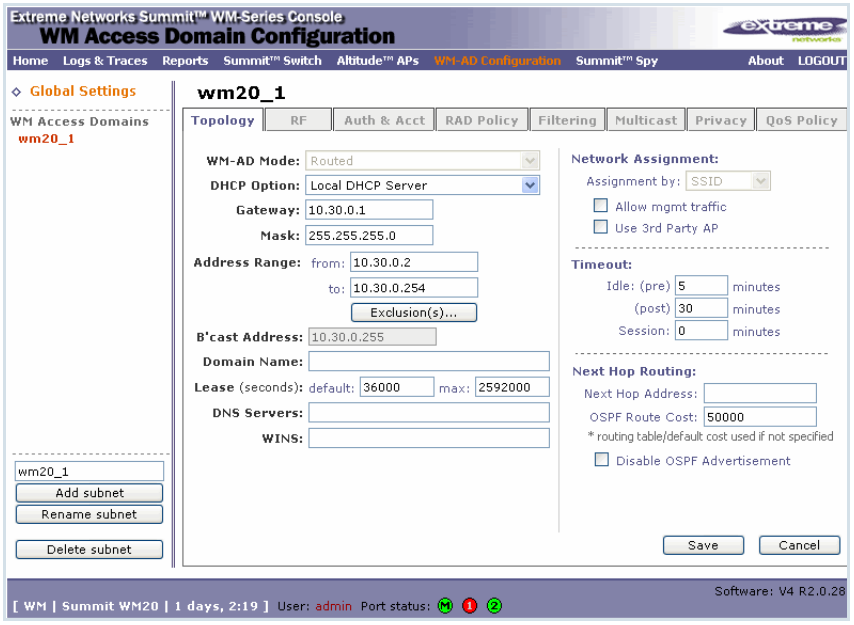
4 Configuring the WM-AD for authentication and privacy

Creating and configuring a Routed WM-AD

The user traffic is tunneled to the Summit WM Controller in Routed WM-AD type. This is the default set-up.

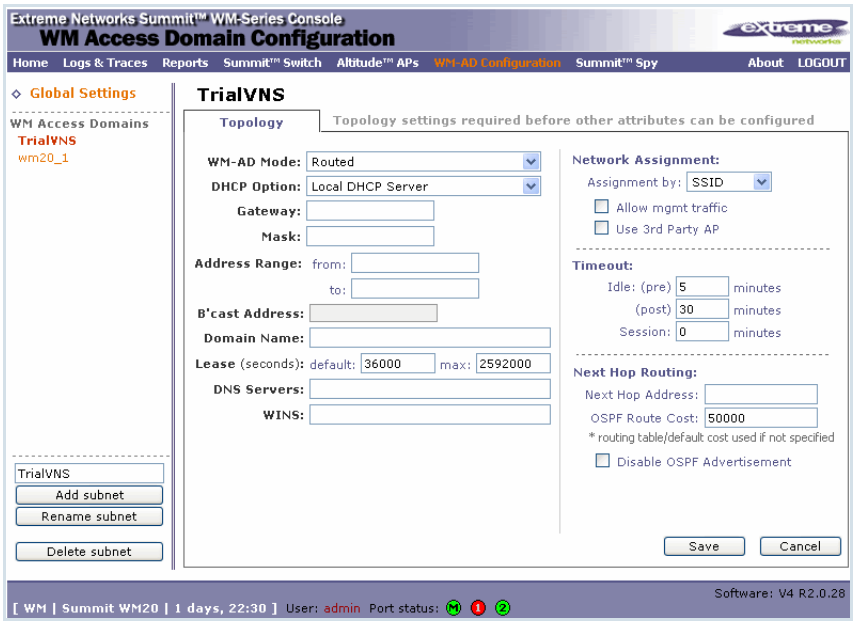
To create and configure a Routed WM-AD type:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.



2 In the **Add subnet** text box, type the WM-AD name.

3 Click **Add subnet**. The name is displayed in the WM Access Domains list and the **Topology** tab is displayed.



4 From the **WM-AD Mode** drop-down list, click **Routed**.

5 From the **DHCP** drop-down list, click one of the two options:

- **Local DHCP Server**: If you select **Local DHCP Server**, the built-in DHCP server in Summit WM Controller provides the IP addresses to the devices to the wireless network. For more information, see "DHCP for WM-AD" on page 12.
  - **Gateway** – The Summit WM Controller advertises this address to the wireless devices when they sign on and get a dynamic IP address. The gateway corresponds to the IP address that is communicated to mobile users
  - **Mask** – Subnet mask for this IP address to separate the network portion from the host portion of the address (typically 255.255.255.0).
  - **Address Range** – Range from which the IP addresses are provided to the wireless devices that would use this WM-AD. This text box (from and to) may populate automatically, if you have already provided the range while configuring the APs.
  - **B'cast Address** – Populates automatically based on the Gateway IP address and the subnet mask of the WM-AD.
  - **Domain Name** – External enterprise domain name. You must type the external enterprise domain name in this text box.
  - **Lease** – text box has two sub text boxes – **default**, and **maximum**. The two sub text boxes dictate the default and maximum time limits a wireless device can keep the DHCP server-assigned IP address. The default value for **Lease default** is 36000 seconds (10 hours), the default value for **Lease Max** is 2539000 seconds.
  - **DNS Server** – This text box relates to the IP address of the domain name server on the enterprise network.
- **Use DHCP Relay**: If you select **Use DHCP Relay**, the local DHCP server on the Summit WM Controller is disabled and the Summit WM Controller instead forwards DHCP requests to the external DHCP server for dynamic IP addresses allocation. For more information, see "DHCP relay for WM-AD" on page 13
  - **Gateway** – For more information, see Step #5 on page 69.
  - **Mask** – For more information, see Step #5 on page 69.

- **DHCP Server** – IP address of the external DHCP server on the enterprise network.

6 From the **Network Assignment** drop-down list, select the network assignment.

The Network Assignment drop-down list gives you two options – **SSID** and **AAA**. To learn more about SSID and AAA, see "WM-AD topology overview" on page 67.

- **SSID network assignment**:
  - **Allow mgmt traffic** – If the management traffic is enabled, it overrides the built-in exception filters that prohibit traffic on the Summit WM Controller data interfaces. For more information on filters, see "Configuring Filtering Rules for a WM-AD" in the *Summit WM20 User Guide.*
  - **Allow 3rd Party AP** – If **Allow 3rd Party AP** is enabled, it allows for the specification of a segregated subnet for non-WM Wireless APs for providing RF services to the users while still utilizing the Summit WM Controller for user authentication and the user policy enforcement. The definition of third-party AP identification parameters allows the system to be able to differentiate the third-party AP device (and the corresponding traffic) from the user devices on that segment. Devices identified as third-party APs are considered pre-authenticated and are not required to complete the corresponding authentication verification stages defined for the users in that segment.

7 Type the values in the following three **Timeout** text boxes:

- **Idle (Pre) Timeout** – Number of seconds a user is allowed to be idle on the WM-AD before authentication.
- **Idle (Post) Timeout** – Number of seconds a user is allowed to idle on the WM-AD after authentication.
- **Session** – Maximum amount of time a session is allowed on the system. If you leave this text box blank, there will be no time limit.

8 Type the values in the **Next Hop Routing** text boxes.

- **Next Hop Address** – The next-hop IP identifies the target device to which all WM-AD (user traffic) will be forwarded to. Next-hop definition supersedes any other possible definition in the routing table.
- **OSPF Route Cost** – The OSPF cost value provides a relative cost indication to allow upstream routers to calculate whether or not to use the Summit WM Controller as a better fit, or lowest cost path to reach the devices in a particular network. The higher the cost, the less likely that the Summit WM Controller will be chosen as a route for traffic, unless that Summit WM Controller is the only possible route for that traffic.
- **Disable OSPF Advertisement** – To disable the OSPF advertisement on the WM-AD select **Disable OSPF Advertisement**.

9 To save your changes, click **Save**.

As a next step, you should configure the authentication mechanism for the WM-AD. For more information, see "Configuring authentication mechanism for WM-AD" on page 73.

Creating and configuring a Bridge Traffic Locally at WM WM-AD

To configure a bridge traffic locally at WM WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the **Add subnet** text box, type the WM-AD name.

3 Click **Add subnet**. The name is displayed in the WM Access Domains list and the **Topology** tab is displayed.

4 From the **WM-AD Mode** drop-down list, click **Bridge Traffic Locally At SWM**. The following text boxes are displayed:

- **DHCP Option** – Provides you the option of either using the external DHCP server or the local DHCP server on the Summit WM Controller. For more information, see Step #5 of Creating and configuring "Routed" WM-AD.
- **VLAN ID** – The ID #of VLAN that is mapped to a Summit WM Controller interface.
- **Interface** – The name of the interface to which the VLAN is mapped.
- **Interface IP address** – The interface's IP address.
- **Mask** – The subnet mask of the WM-AD.

5 From the **Network Assignment** drop-down list, click the network assignment. For more information on network assignment, see "Step #6 of Creating and configuring Routed WM-AD".

6 Type the values in the following three **Timeout** text boxes – **Idle (Pre)**, **Idle (Post)**, and **Session**. For more information on **Timeout** text boxes, see "Step #7 of Creating and configuring Routed WM-AD".

7 To save your changes, click **Save**.

As a next step, you should configure the authentication mechanism for the WM-AD. For more information, see "Configuring authentication mechanism for WM-AD" on page 73.

Creating and configuring a Bridge Traffic Locally at AP WM-AD

This configuration enables the WM-AD to provide branch office mode. The **VLAN ID** for the branch office is assigned by the office network administrator. The Wireless AP will operate correctly only when the **VLAN ID** is unique per AP.

To configure a Bridge traffic locally at AP WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the **Add subnet** text box, located in the lower portion of the left pane, type the WM-AD name.

3 Click **Add subnet**. The name is displayed in the WM Access Domains list and the **Topology** tab is displayed.

4 From the **WM-AD Mode** drop-down list, click **Bridge Traffic Locally At AP**. The **VLAN Setting** text boxes are displayed.

5 To define the VLAN setting, select one of the following:

- **Tagged** – If you select **Tagged**, type the VLAN ID in **VLAN ID** text box. The default value is 1.
- **Untagged** – If you select **Untagged**, the VLAN will be untagged.

6 To save your changes, click **Save**.

You have created a WM-AD. Now you should configure the authentication mechanism for the WM-AD.

The following section explains how to configure the authentication mechanism.

Assigning Wireless APs' radios to WM-AD

Each radio of the Wireless AP can support up to eight WM-ADs.

Summit WM20 Controllers can support up to eight WM-ADs.

To assign WMs to a WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane WM Access Domains list, click the WM-AD you want to assign to the Wireless APs. The **Topology** tab is displayed.

3 Click the **RF** tab.

4 In the **SSID** box, type the SSID that wireless devices will use to access the WM.

5 In the **Advanced RF Settings**, select the following:

- **Suppress SSID** – Select to prevent this SSID from appearing in the beacon message sent by the Summit WM Controller. The wireless device user seeking network access will not see this SSID as an available choice, and will need to specify it.
- **Enable proprietary IE** – Select to enable radio channel reports to be sent to the Summit WM Controller for improving roaming time and reliability, as well as improving client power consumption. The Wireless AP channel report lists all channels on which the WM-AD can be found—all channels used by all APs that have been assigned to the WM-AD. The Wireless AP will provide this list in a proprietary information element to be included in Beacon and Probe response packets. By default this option is disabled. It is recommended to enable this option.
- **Enable 11h support** – Select to enable TPC (Transmission Power Control) reports. By default this option is disabled. It is recommended to enable this option.
  - **Apply power back-off** – Select to enable the Wireless AP to use reduced power (as does the 11h client). By default this option is disabled. It is recommended to enable this option.
- **Process client IE requests** – Select to enable the Wireless AP to accept IE requests sent by clients via Probe Request frames and responds by including the requested IE's in the corresponding

Probe Response frames. By default this option is disabled. It is recommended to enable this option.

6 From the **Wireless APs** list, select the APs and their radios that you want to assign to the WM-AD. You can also use the **Select APs** list, to select APs and their radios by grouping:

- **All radios** – Select to assign all of the APs' radios.
- **a radios** – Select to assign only the APs' a radios.
- **b/g radios** – Select to assign only the APs' b/g radios.
- **local APs** - all radios – Select to assign only the local APs.
- **local APs** - a radios – Select to assign only the local APs' a radios.
- **local APs** - b/g radios – Select to assign only the local APs' b/g radios.
- **foreign APs** - all radios – Select to assign only the foreign APs.
- **foreign APs** - a radios – Select to assign only the foreign APs' a radios.
- **foreign APs** - b/g radios – Select to assign only the foreign APs' b/g radios.
- **clear all selections** – Select to clear all of the AP radio assignments.
- **original selections** – Select to return to the AP radio selections prior to the most recent save.

7 To save your changes, click **Save**.

You can view the WM-ADs that each radio is assigned to by clicking on each radio tab in the **WM-AD Configuration** screen.

Configuring authentication mechanism for WM-AD

The Summit WM Controller offers several authentication options. The options can be classified under network assignment types – **SSID** and **AAA** (Authentication, Authorization and Accounting).

- **SSID** – The SSID network assignment type offers the following authentication options:
  - By Captive Portal
    - By internal Captive Portal
    - By external Captive Portal
    - No Captive Portal support
  - By MAC-based authentication

NOTE

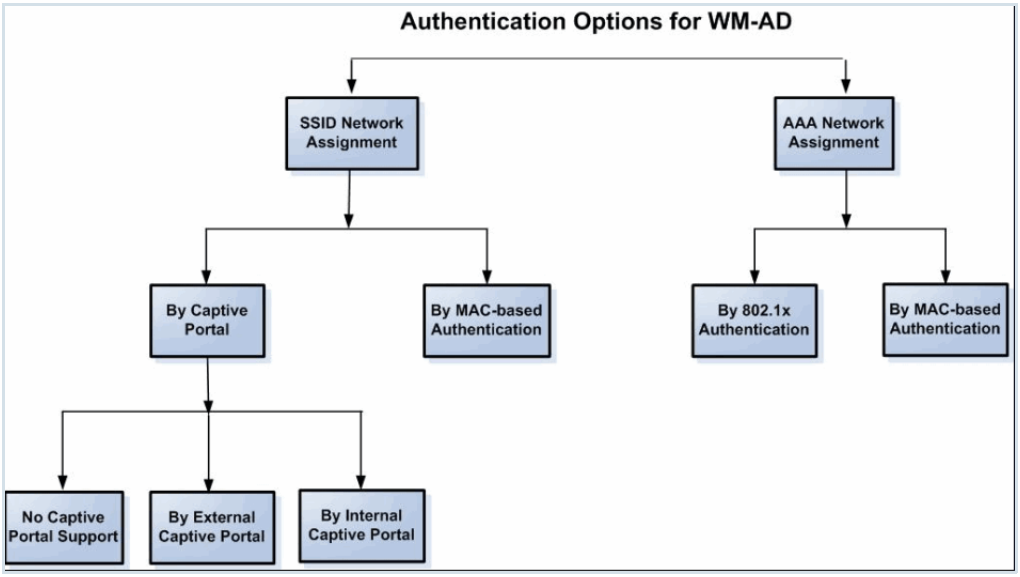
You must note here that the internal Captive Portal does not substitute the external RADIUS server. The RADIUS server is still needed. The internal Captive Portal within the Summit WM Controller displays the webpage to enable the users to supply their user name and password. The user name and password are sent to the configured RADIUS server for authentication. In case of external Captive Portal, webpage authentication is performed by the external Captive Portal.

- **AAA** – The **AAA** (Authentication, Authorization and Accounting) network assignment type offers the following authentication options:

- By 802.1x authentication – The mobile user is authenticated before gaining access to the network.
- By MAC-based authentication – The mobile user is authenticated on the basis of their MAC address.

The following figure illustrates the authentication options:

Figure 10: Authentication options



MAC-based authentication can be used in both SSID network assignment and AAA network type assignment.

Authentication mechanism for SSID network assignment

The SSID network assignment provides the following authentication options:

- Captive Portal authentication.
  - Internal Captive Portal
  - External Captive Portal
  - No Captive Portal Support
- MAC-based authentication

Configuring internal Captive Portal authentication

In order to configure the authentication mechanism, you must first create and configure a WM-AD. For more information, see the following:

- "WM-AD topology overview" on page 67
- "Creating and configuring a Routed WM-AD" on page 68;
- "Creating and configuring a Bridge Traffic Locally at WM WM-AD" on page 71.

To configure internal Captive Portal:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, select the **SSID** WM-AD for which you want to configure the authentication mechanism. The **Topology** tab is displayed.

3 Click the **Auth & Acct** tab. The **Auth & Acct** text boxes are displayed in the right pane.

The **Auth & Acct** tab offers you the following thee options:

- **Auth** – Defines the authentication servers.
- **MAC** – Defines the servers for MAC-based authentication.
- **Acct** – Defines the accounting servers.

4 Click **Auth**. The authentication text boxes are displayed.

5 From the **RADIUS** drop-down list, click the server that you want to use for Captive Portal authentication. The selected server is displayed in the list of **Config'd Servers** and a red asterisk is displayed next to **Auth**, indicating that the server has been assigned.

NOTE

*The **RADIUS** drop-down list reflects the servers that are defined on the **Global Settings** screen. For more information, see the* Summit WM20 User Guide.

Use the **Up** and **Down** buttons to prioritize the servers for redundancy. The servers are prioritized in the sequence they are displayed in the list of **Config'd Servers**. You can change the sequence by selecting the server and then clicking on the **Up** and **Down** buttons.

6 Type the appropriate values in the **Auth** text boxes.

- **Port** – Used to access the RADIUS server. The default is 1812.
- **# of Retries** – Number of times the Summit WM Controller will attempt to access the RADIUS server.
- **Timeout** – Maximum time for which Summit WM Controller will wait for a response from the RADIUS server before making a re-attempt.
- **NAS Identifier** – RADIUS attribute that identifies the server responsible for passing information to the designated servers and then acting on the response returned. This is an optional text box.
- **Auth Type** – Authentication protocol to be used by the RADIUS server to authenticate the wireless device users. The four options are:
  - AP – Password authentication protocol
  - CHAP – Challenge handshake authentication protocol
  - MS-CHAP – Windows-specific version of CHAP
  - MS-CHAP v2– Windows-specific version of Chap (Version 2)
- **Set as primary server** – Select to configure the RADIUS server as the primary server.

7 Select the appropriate checkbox against **Include VSA Attributes**.

Vendor Specific Attributes feature provides you the following three options:

- APs
- WM-AD
- SSID

These VSA are defined on the RADIUS server.

8 To reset the server that you are configuring as the primary server, click **Reset to Primary** button is enabled and you want to reset the server (that you are configuring) as the primary server, click **Reset to Primary**.

The **Reset to Primary** button is enabled in the following RADIUS redundancy set-up scenarios:

- The Summit WM Controller's connection to the primary RADIUS server fails.
- The Summit WM Controller automatically attempts and is successful in initiating a connection with the alternative RADIUS server.
- The alternative RADIUS server becomes the primary server.

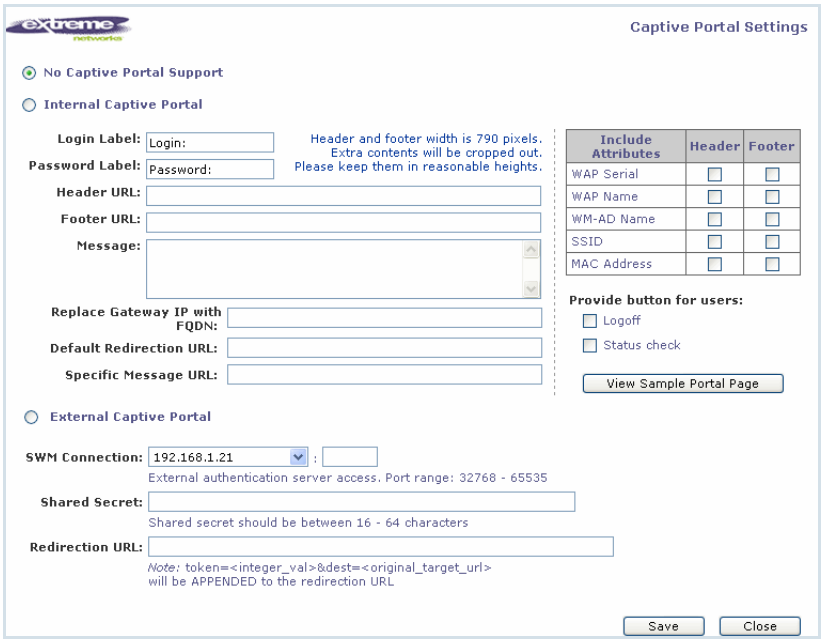
If you want the server that you are configuring to be the primary server, you must click on the enabled **Reset to Primary** button.

9 To save your changes, click **Save**.

10 Test the Summit WM Controller's connection to all configured RADIUS servers.

To test the connection with the RADIUS servers, click **Test**. The RADIUS servers display the message transaction on their screens. You must visually verify the state of the server connection and the user authentication.

11 Click **Configure Captive Portal Settings**. The **Captive Portal Configurations** screen is displayed.



12 Select the **Internal Captive Portal** option.

13 Type the values in the following text boxes:

- **Login Label** – The text that will appear as a label for the user name.
- **Password Label** –The text that will appear as a label for the user password text box.
- **Header URL** – The URL of the file to be displayed in the header of the Captive Portal screen.
- **Footer URL** – The URL of the file to be displayed in the footer of the Captive Portal screen.

NOTE

The maximum width allowed for the header and footer is 790 pixels. There is no restriction on the height. If the width of the header/footer is more than 790 pixels, the header/footer will appear truncated on the Captive Portal screen.

- **Message** – The message that you type in this text box will appear above the **Login** text box to greet the user. You can type a message explaining why the Captive Portal screen is displayed and the instructions for the user.
- **Replace Gateway IP with FQDN** – If you are using FQDN (Fully Qualified Domain Name) as the gateway address, you must type the FQDN in this text box.
- **Default Redirection URL** – The URL to which the wireless devices will be directed after authentication.
- **Specific Message URL** – The URL of a document that will be displayed in a text frame on the Captive Portal login page. This text frame can be used to display lengthier messages, such as terms and conditions of use for users who have not yet logged in.

14 In the right pane, select the VSA (Vendor Specific Attributes) that you want to send to the authentication server along with other authentication details for authentication purpose.

- WAP Serial Number
- WAP Name
- WM-AD Name
- SSID
- MAC Address

The selection of these VSAs dictate with what VSA the wireless users will be identified. For example, the wireless users can be identified by which Wireless AP or WM-AD they are using.

15 To provide the users with logoff button to signout, select **Logoff**.

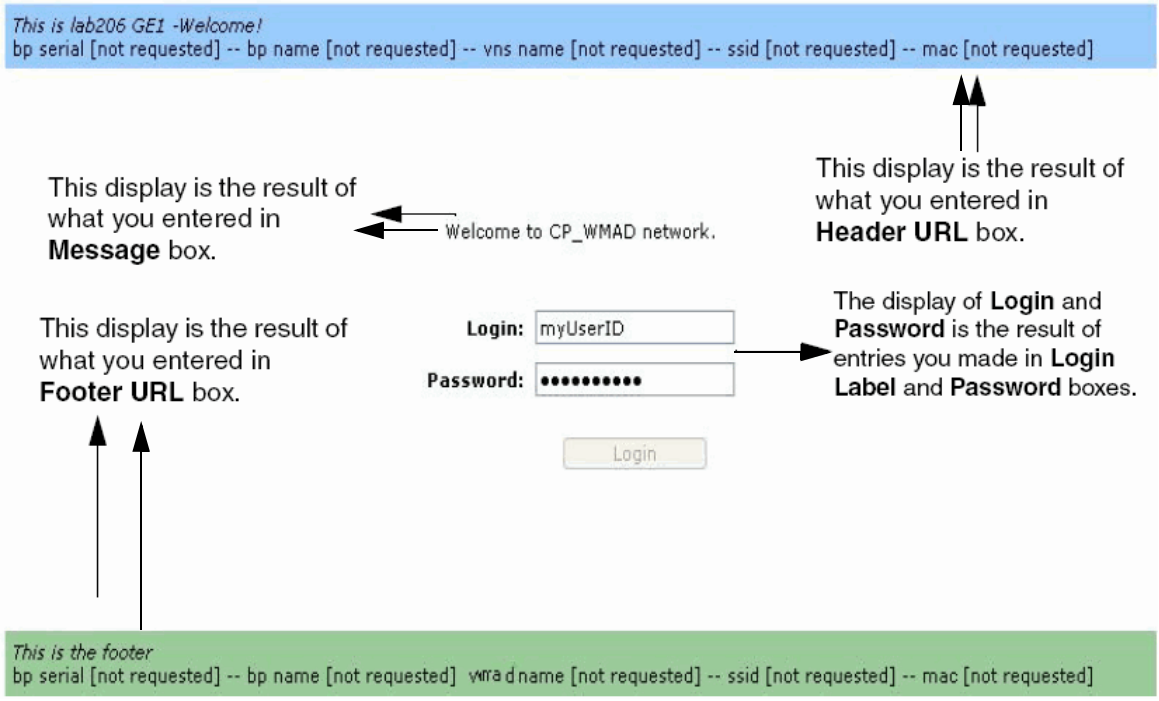
If you select **Logoff**, the users will be provided with a logoff button to signout. The logoff button launches a pop-up logoff screen, empowering the users to control their logoff.

16 to provide the users with a status check button, select **Status check**.

The **Status check** button enables the users to monitor session statistics such as system usage and time left in a session.

17 To save your changes, click **Save**.

18 To review your Captive Portal page, click **View Sample Portal**. The login screen of the portal is displayed.


This is lab206 GE1 -Welcome!
bp serial [not requested] -- bp name [not requested] -- vns name [not requested] -- ssid [not requested] -- mac [not requested]
This display is the result of what you entered in Header URL box.
This display is the result of what you entered in Message box.
Welcome to CP_WMAD network.
This display is the result of what you entered in Footer URL box.
Login: myUserID
Password: ••••••••••
The display of Login and Password is the result of entries you made in Login Label and Password boxes.
Login
This is the footer
bp serial [not requested] -- bp name [not requested] vwra d name [not requested] -- ssid [not requested] -- mac [not requested]

Configuring external Captive Portal authentication

In order to configure the authentication mechanism, you must first create and configure a WM-AD. For more information, see the following.

- "WM-AD topology overview" on page 67
- "Creating and configuring a Routed WM-AD" on page 68
- "Creating and configuring a Bridge Traffic Locally at WM WM-AD" on page 71.

To configure external Captive Portal:

1 Configure internal captive portal authentication. For more information, see Step 1 to Step 10 of "Configuring internal Captive Portal authentication" on page 74.

2 Click **Configure Captive Portal** option. The **Captive Portal Configuration** screen is displayed.

3 Select the **External Captive Portal** option.

4 In the **SWM Connection** drop-down list, click the Summit WM Controller's IP address.

5 In the **Port** text box, type the Summit WM Controller's port.

6 In the **Shared Secret** text box, type the password for encrypting the information exchanged between the Summit WM Controller and the external Captive Portal server.

7 In the **Redirection URL** text box, type the URL to which the wireless user will be directed before the authentication.

8 To save your changes, click **Save**.

No Captive Portal support

By default, a new WM-AD with SSID network assignment type is assigned **None** authentication. A SSID WM-AD with this set-up circumvents all authentication mechanisms and the Summit WM Controller accepts all wireless devices without any authentication.

However, even with **None** authentication option, you can still control access to the network by defining appropriate filtering rules for **Non-authenticated** filters. For more information, see "Configuring filtering rules for a Non-authenticated filter" on page 82.

None authentication does not mean that no authentication will take place. Instead, the default filter is applied for the authentication. For more information, see "No Captive Portal support" on page 79.

To configure None authentication:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, select the **SSID WM-AD** for which you want to configure the authentication mechanism. The **Topology** tab is displayed.

3 Click the **Auth & Acct** tab.

4 Click **Configure Captive Portal**. The **Captive Portal Configuration** screen is displayed.

5 Select the **No Captive Portal Support** option.

6 To save your changes, click **Save**.

NOTE

*In order to control network access of the wireless device users on this WM-AD, you must define appropriate rules in **Default** filter. The rules in the **Default** filter should be very restrictive when you use **None** authentication mechanism. You must configure the final rule in the **Default** filter a **deny all** rule. For more information, see "Configuring filtering rules for Default filter" on page 83.*

Configuring MAC-based authentication

MAC-based authentication restricts wireless device's access to the network, based on its MAC addresses. The Summit WM Controller relays the client devices' MAC address to a RADIUS server on your network following which the RADIUS server checks the address against a list of allowed MAC addresses. If the client device's MAC address matches one in the list of allowed MAC addresses in the RADIUS server, the user is granted access to the network.

To set-up the RADIUS server for MAC-based authentication, you must set up a user account with User ID=MAC and Password= MAC or a password defined by the administrator for each user.

To define MAC-based authentication for a WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** is displayed.

2 In the left pane, select the **SSID WM-AD** for which you want to configure the authentication mechanism. The **Topology** tab is displayed.

3 Click the **Auth & Acct** tab.

4 Click **MAC**.

5 From the **RADIUS** drop-down list, click the server that you want to use for MAC authentication.

6 Click **Use**. The selected server is displayed in the list of **Config'd Servers** and a red asterisk is displayed next to **MAC**, indicating that the server has been assigned.

NOTE

*The **RADIUS** drop-down list reflects the servers that are defined on the **Global Settings** screen. For more information, see* Summit WM20 User Guide.

7 If your RADIUS server is being used for another type of authentication or accounting, select **Use server for MAC Authorization**.

8 Type the values in the **MAC** text boxes.

- **Port** – Port used to access the RADIUS server. The default is 1812.
- **# of Retries** – Number of times the Summit WM Controller will attempt to access the RADIUS server.
- **Timeout** – Maximum time for which Summit WM Controller will wait for a response from the RADIUS server before making a re-attempt.
- **NAS IP Address** – IP address of the network access server (NAS).
- **NAS Identifier** – RADIUS attribute that identifies the server responsible for passing information to the designated servers. This is an optional text box.
- **Auth Type** – Provides four options for the authentication protocol to be used by the RADIUS server to authenticate the wireless device users:
  - PAP – Password authentication protocol
  - CHAP – Challenge handshake authentication protocol
  - MS-CHAP – Windows-specific version of CHAP
  - MS-CHAP – Windows-specific version of Chap (Version 2)
- **Password** – Password you want to use for MAC-based authentication requests. The password is forwarded by the Summit WM Controller to the authentication server. If the Password box is left empty, the MAC address will act as the default password. Toggle between Mask/Unmask to view and hide the defined password.
- **Set as primary server** – To set the RADIUS server as the primary server, select **Set as the primary server**.
- **MAC-based authentication on roam check** – To ensure that the client devices are authorized every time they roam to another AP, select **MAC-based authentication on roam check**. If you don't select this feature, the client devices will be authenticated only at the start of their sessions.

9 To save your changes, click **Save**.

Authentication mechanism for AAA network assignment

The AAA (Authentication, Authorization and Accounting) network assignment provides the following two authentication options:

- 802.1x authentication.
- MAC-based authentication

The following sections explain the above two authentication options.

Configuring 802.1x authentication

For more information, see "Configuring privacy for AAA network assignment" on page 87.

NOTE

Since Section 8.7.2, Privacy for AAA network assignment, is part of Privacy policies configuration, you can configure 802.1x authentication after you complete the configurations for authentication and filtering rules

Configuring MAC-based authentication

MAC-based authentication can be used in both SSID network assignment and AAA network type assignment. For more information, see "Configuring MAC-based authentication" on page 79.

Now you must configure the WM-AD for filters. The following section describes how to configure the WM-AD filters.

Configuring filtering rules

On a per WM-AD basis, the Summit WM Controller can be configured to apply a specific filtering policy on the user traffic that is routed through it. The filtering policies are applied after the authentication is returned.

The filter definition can be static on the Summit WM Controller itself, or the filter definition can be set to dynamically provisioned if RADIUS authentication is used. The standard RADIUS attribute can be used to identify a specific filter definition to apply to incoming/outgoing user traffic upon successful authentication of the user during authentication.

For more information, see the *Summit WM20 User Guide.*

Configuring filtering rules for filters in SSID network assignment

The SSID network assignment type offers the following three default filters:

- Exception
- Non-authenticated
- Default

Configuring filtering rules for Exception filter

To configure rules for the Exception filter:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **SSID WM-AD** for which you want to define the filtering rules. The **Topology** tab is displayed.

3 Click the **Filtering** tab.

4 From the **Filter ID** drop-down list, click **Exception**.

5 Define a filtering rule.

   a In the **IP/subnet:port** text box, type the destination IP address.

   You can also specify the IP range, a port designation or a port range on the IP address in the **IP/subnet:port** text box.

   b From the **Protocol** drop-down list, click the applicable protocol.

   The default is **N/A**.

   c Click **Add**. The filtering rule is displayed.

6 Define a rule to allow access to the default gateway for this WM-AD.

   a Select the **IP:Port** of the filtering rule that you defined in Step 5.

   b In the **IP/subnet:port**, type the default gateway IP address (WM-AD IP address) that you defined in the **Topology** tab for this WM-AD.

   c Click **Add**. The rule is displayed.

7 Define more rules by carrying out Step 5 and Step 6.

8 Check the **Allow** feature for every rule you created.

   You may edit the order of the rules by selecting a filter and clicking the **Up**/**Down** buttons. The filtering rules are executed in the order that is displayed on the screen.

9 To save your changes, click **Save**. The rules for the **Exception** filter are saved.

Configuring filtering rules for a Non-authenticated filter

The rules for a Non-authenticated filter enable you to identify and manage the destinations to which a mobile device is allowed to gain access without undergoing an authentication redirection. Typically, the recommended default rule is to deny all. Administrators must define the rules that will permit users to access essential services such as the following:

- DNS
- Default Gateway (WM-AD interface IP)

Any HTTP streams requested by the client for denied targets will be redirected to the specified location. For more information, see the *Summit WM20 User Guide*.

To configure rules for the Non-authenticated filter.

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, select the SSID WM-AD for which you want to configure the **Non-authenticated** filtering rules. The **Topology** tab is displayed.

3 Click the **Filtering** tab.

4 From the **Filter ID** drop-down list, click **Non-authenticated**.

5 Define a filtering rule.

   a In the **IP/subnet:port** text box, type the destination IP address.

   You can also specify the IP range, a port designation or a port range on the IP address in the **IP/subnet:port** text box.

   b From the **Protocol** drop-down list, click the applicable protocol.

   The default is **N/A**.

6 For Captive Portal assignment, define a rule to allow access to the default gateway for this WM-AD:
   a Select the **IP:Port** of the filtering rule that you defined in Step 5.
   b In the **IP/subnet:port**, type the default gateway IP address (**WM-AD** IP address) that you defined in the **Topology** screen for this WM-AD.
7 Click **Add**. The rule is displayed in the middle of the screen.
8 If applicable, define more rules by repeating Steps 5 and 6.
9 To allow the traffic between the wireless device and the network, Select **In and Out**.
10 Select the **Allow** feature for every rule you created.
11 To save your changes, click **Save**.

Configuring filtering rules for Default filter

The Default filter is applied by default (automatically) after the authentication of the wireless device under the following circumstances:

- No match is found in the Exception filter rules
- No filter attribute value is returned by the authentication server for the device
- No match is found in the filter ID values

In order to ensure that a packet is not dropped entirely under the above circumstances, the final rule in the **Default** filter must be **Allow All**.

To configure rules for the Default filter:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.
2 In the left pane, click the WM-AD for which you want to configure the **Default** filtering rules. The **Topology** tab is displayed.
3 Click the **Filtering** tab.
4 From the **Filter ID** drop-down list, click **Default**. The default rule in the **Default** filter is displayed.

   The default rule in the **Default** filter displays a Deny All configuration. You can modify the configuration to Allow All, if it is appropriate for the network needs of the WM-AD.

   If applicable, you can create more rules for the **Default** filter.
5 Configure filtering rules for the Exception filter. For more information, see Step 5 to Step 8 of "Configuring filtering rules for Exception filter" on page 81.
6 To save your changes, click **Save**.

Configuring filtering rules for filters in AAA network assignment

The **AAA** network assignment type offers the following two default filters:

- Default
- Exception

In **AAA** network assignment type, a **Non-authenticated** filter becomes unnecessary because the users are already authenticated.

For more information, see "Configuring filtering rules for Exception filter" on page 81, and "Configuring filtering rules for Default filter" on page 83.

Now you should configure privacy for the WM-AD. The following section explains how to configure privacy.

Configuring privacy for WM-AD

Privacy is a mechanism that protects data over wireless and wired networks using encryption techniques.

The Summit WM Controller provides several privacy mechanism to protect data over the WLAN. The privacy mechanism can be classified on the basis of network assignment types — SSID and AAA.

Configuring privacy for SSID network assignment

The SSID network assignment provides three privacy options:

- None
- Static WEP
- WPA pre-shared key (PSK)

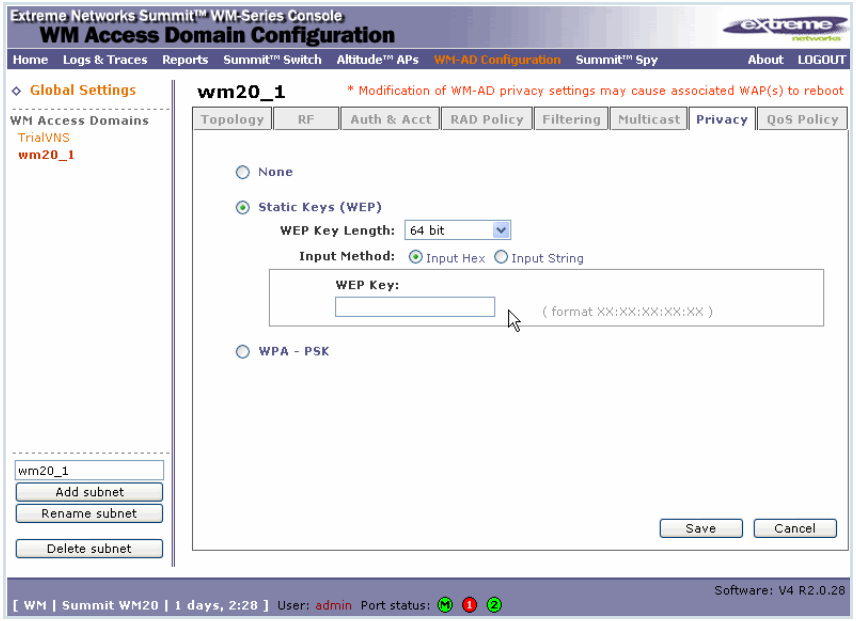
Configuring Static WEP

To configure Static WEP:

1 From the main menu, click **WM-AD Configuration**. **The WM-AD Configuration** screen is displayed.

2 In the left pane, click the **SSID WM-AD** for which you want to configure the **Static WEP** privacy. The **topology** tab is displayed.

3 Click the **Privacy** tab.



4 Select **Static Keys (WEP)**.

5 Type the values in the following text boxes:

- **WEP Key Length** – Size of a WEP Key.
- **Input Hex** – If you enable **Input Hex**, the **WEP Key** text box is displayed. Type the **WEP Key** manually in this text box.
- **Input String** – If you select **Input String**, the following two text boxes are displayed –**Strings** and **WEP Key**. Type the secret WEP Key string in the **WEP Key String** text box. The **WEP Key** text box is automatically filled by the corresponding Hex code.

6 To save your changes, click **Save**.

Configuring WPA-PSK

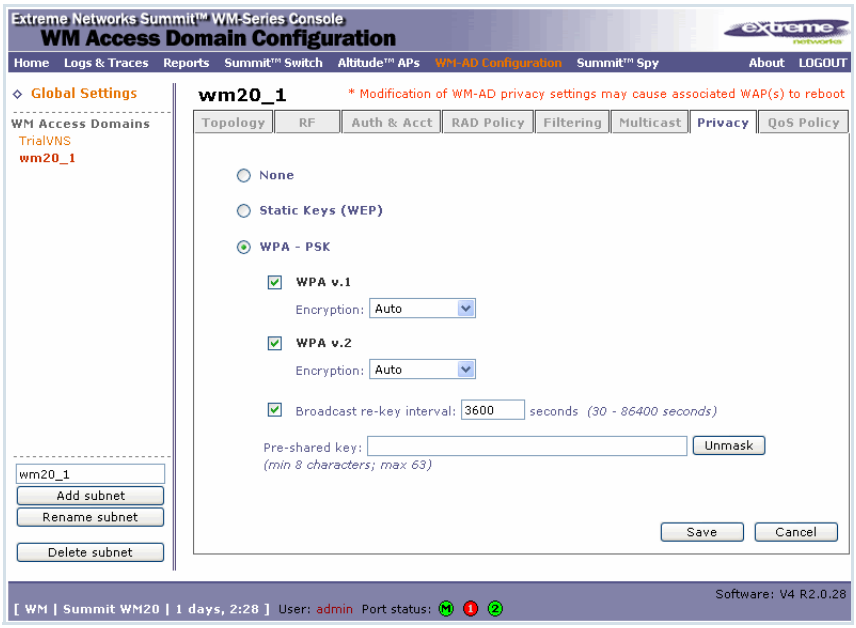
To configure WPA-PSK privacy:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **SSID WM-AD** for which you want to configure WPA-PSK privacy. The **Topology** tab is displayed.

3 Click the **Privacy** tab.

4 Select **WPA-PSK**.



5 Select **WPA v1**.

If you select WPA v1, its subordinate **Encryption** drop-down menu is enabled.

The **Encryption** drop-down menu offers you the following two options:

- **Auto** – If you click **Auto**, the Wireless AP will advertise both TKIP and **CCMP** (counter mode with cipher block chaining message authentication code protocol).
- **TKIP only** – If you click **TKIP only**, the Wireless AP will advertise TKIP as an available encryption protocol. It will not advertise CCMP.

6 Select **WPA v2**.

If you select WPA v2, its subordinate **Encryption** drop-down menu is enabled.

The Encryption drop-down menu offers you the following two options – **Auto** and **TKIP** only. For more information, see Step #5 on page 86.

7 To enable re-keying after a time interval, select **Broadcast re-key interval**.

If this feature is not selected, the broadcast encryption key is never changed and the Wireless AP will always use the same broadcast key for broadcast/multicast transmissions. This will compromise the security for wireless communications.

8 In the **Broadcast re-key interval** text box, type the time interval after which you want the broadcast encryption key to be changed automatically. The default is 3600.

9 In the **Pre-shared Key** text box, type the shared secret key that is to be used between the wireless device and the Wireless AP.

The shared secret key is used to generate the 256 bit key.

10 To confirm your entry, click **Unmask**. The shared key entry is displayed.

You must always unmask the shared secret key before you save your settings.

11 To save your changes, click **Save**.

Configuring privacy for AAA network assignment

The AAA (Authentication, Authorization and Accounting) assignment provides following privacy mechanisms:

- Static keys (WEP)
- Dynamic WEP keys
- Wi-fi Protected Access (WPA) version 1 with encryption by temporal key integrity protocol (TKIP)
- Wi-fi Protected Access (WPA) version 2 with encryption by advanced encryption standard with counter-mode/CBC-MAC protocol (AES-CCMP)

Configuring Static WEP

To configure Static WEP:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **AAA WM-AD** for which you want to configure the **Static WEP** privacy. The **topology** tab is displayed.

3 Click the **Privacy** tab.

4 Repeat Step 4 to Step 6 of "Configuring Static WEP" on page 84.

Configuring Dynamic WEP

The dynamic key WEP mechanism changes the key for each user and each session.

To set up Dynamic WEP privacy:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **AAA WM-AD** for which you want to configure the Dynamic WEP privacy. The **Topology** tab is displayed.

3 Click the **Privacy** tab.

4 Select **Dynamic Keys**.

5 To save your changes, click **Save**.

Configuring Wi-fi Protected Access (WPA v1 and WPA v2) privacy

WPA v1 and WPA v2 adds authentication to WEP encryption and key management. The authentication portion of WPA for AAA is in enterprise mode. Key features of WPA privacy include:

- Specifies 802.1x with extensible authentication protocol (EAP)
- Uses RADIUS protocols for authentication and key distribution; therefore, requires a RADIUS or other authentication server.
- Centralizes management of user credentials.

The WPA authentication process involves the following steps:

- **Step 1** – The wireless device associates with Wireless AP.

- **Step 2** – The Wireless AP blocks the wireless device's network access while the authentication process is carried out. The Summit WM Controller sends the authentication request to the RADIUS authentication server.
- **Step 3** – The wireless device provides credentials that are forwarded to the authentication server through the Summit WM Controller.
- **Step 4** – If the wireless device is not authenticated, the device remains blocked from the network.

For more information, see the *Summit WM20 User Guide*.

To configure WPA privacy:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **AAA WM-AD** for which you want to configure the Dynamic WEP privacy. The **Topology** tab is displayed.

3 Click the **Privacy** tab.

4 Select **WPA**. The **WPA** text boxes are displayed.

5 Select one of the following:

- **WPA v1**:
  - **Auto** – If you click **Auto**, the Wireless AP will advertise both TKIP and **CCMP** (counter mode with cipher block chaining message authentication code protocol).
  - **TKIP only** – If you click **TKIP only**, the Wireless AP will advertise TKIP as an available encryption protocol. It will not advertise CCMP.
- **WPA v2**:
  - **Auto**: For more information, see the description of **Auto** under **WPA v1**.
  - **TKIP only**: For more information, see the description of **TKIP only** under **WPA v1**.

If you select WPA v1, its **Encryption** drop-down menu is enabled. The **Encryption** drop-down menu offers the following two options:

6 For re-keying after a time interval, select **Broadcast re-key interval**.

If this feature is not enabled, the broadcast encryption key is never changed and the Wireless AP will always use the same broadcast key for broadcast/multicast transmissions. This will compromise the security for wireless communications.

7 In the **Broadcast re-key interval** text box, type the time interval after which you want the broadcast encryption key to be changed automatically. The default is 3600.

8 To save your changes, click **Save**.

You have completed the WM-AD configuration.

Now you should configure the Summit WM Controller's availability and mobility features. The following chapter describes how to configure the Summit WM Controller's availability and mobility features.

8 Availability configuration

The chapter describes how to configure the Summit WM Controller's availability and mobility features.

The topics in this chapter are organized as follows:

- "Availability overview" on page 89
- "Configuring availability feature" on page 89

Availability overview

The Summit WM Wireless LAN (WLAN) Solution's availability feature maintains service availability in the event of a Summit WM Controller outage.

The availability feature links two Summit WM Controllers to form a pair in order to share information about their Wireless APs. If one Summit WM Controller fails, its Wireless APs are allowed to connect to the other Summit WM Controller.

The Wireless APs that connect to a backup Summit WM Controller during a failover are assigned to the WM-AD that is defined in the Summit WM Controller's default Wireless AP configuration. If the default Wireless AP configuration has no WM-AD assigned, the failover Wireless APs will not provide service. Therefore it is very important to define a default Wireless AP configuration on all Summit WM Controllers.

Configuring availability feature

Before you begin the availability configuration, you must ensure:

- A network connection exists between the two Summit WM Controllers. This connection is used to enable the availability link between the Summit WM Controllers. The availability link is established on port 13907.
- A DHCP server for the Wireless AP subnets is setup to support "Option 78 for SLP", so that it points to the IP addresses of the physical interfaces on both the Summit WM Controllers.

High-level overview of the availability configuration process

The following is a high-level overview of the availability configuration process:

- Step 1 – Define a WM-AD with the same SSID on each Summit WM Controller. For more information on how to define a WM-AD, see Chapter 7, "WM-AD configuration."
- Step 2 – Associate radios and change poll timeout to 15 seconds in WM-AD of Wireless AP default settings screen.
- Step 3 – Assign the Wireless APs to their home Summit WM Controllers.
- Step 4 – Enable both the Summit WM Controllers as an availability pair.

- Step 5 – Define a primary Summit WM Controller.
- Step 6 – Select one of the security mode options:
  - **Allow all Altitude APs to connect** – If the Summit WM Controller does not recognize the Wireless AP's serial number, it sends a default configuration to the Wireless AP. If the Summit WM Controller recognizes the serial number, it sends the specific configuration (port and binding key) set to the Wireless AP.
  - **Allow only approved Altitude APs to connect** – If the Summit WM Controller does not recognize the Wireless AP's serial number, it prompts you to create a configuration. If the Summit WM Controller recognizes the serial number, it sends the configuration (port and binding key) to the Wireless AP.

This section is organized under the following sub-sections:

- "Defining a WM-AD with the same SSID on both the Summit WM Controllers" on page 90
- "Assigning radios to WM-AD and changing the poll timeout value on Wireless AP configuration screen" on page 90
- "Assigning the Wireless APs to their home Summit WM Controller" on page 91
- "Enabling availability pair, defining primary Summit WM Controller, and selecting security mode" on page 92
- "Viewing the Wireless AP availability display" on page 93
- "Viewing the active Wireless APs report" on page 93

Defining a WM-AD with the same SSID on both the Summit WM Controllers

Step 1of the availability configuration process is to define WM-AD with the same SSID on both the Summit WM Controllers.

For information, see See Chapter 7, "WM-AD configuration."

NOTE

You must use the same SSID on both the primary and the secondary Summit WM Controllers.

Assigning radios to WM-AD and changing the poll timeout value on Wireless AP configuration screen

Step 2 of the availability configuration process is to assign radios to the WM-AD, and changing the poll timeout value on Altitude AP configuration screen.

To assign radios to WM-AD change the poll timeout value:

1 Login on both the Summit WM Controllers.

2 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

3 In the left pane, click **WAP Default Settings**. The default settings are displayed.

4 In the **WAP Properties** section, change the default value to 10 in the **Poll Timeout** text box.

NOTE

*The **Poll Timeout** value for availability must be 10.*

5 In the **WM-AD Assignment** section, select the WM-AD that you have defined for availability.

6 To assign b/g and a radios to the WM-AD, select the corresponding radio checkboxes.

7 To save your changes, click **Save**.

8 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

9 Repeat Step 3 to 7.

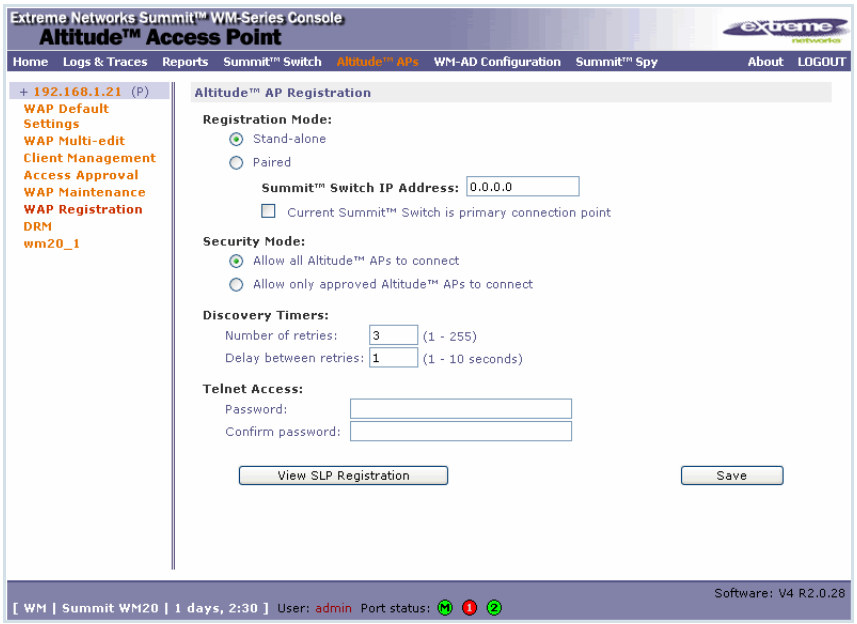
Assigning the Wireless APs to their home Summit WM Controller

Step 3 of the availability configuration process is to assign the Wireless APs to their home Summit WM Controller.

1 Login on both the Summit WM Controllers.

2 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

3 In the left pane, click **WAP Registration**. The **WAP Registration** screen is displayed.



4 In the **Registration Mode** section, click **Stand-alone**.

5 In the **Security Mode** section, click **Allow only approved Altitude AP to connect**.

6 From the main menu of the secondary Summit WM Controller, click **Altitude APs.** The **Altitude AP** screen is displayed.

7 Repeat Step 3 to Step 5.

8 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

9 In the left menu, click **Access Approval**. The **Access Approval** screen is displayed.

10 Check the status of every Wireless AP and approve all those that should be connected to the primary Summit WM Controller.

NOTE

You must delete all such Wireless APs that are in pending state and you do not intend to approve them.

11 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

12 Repeat Step 9 to Step 10.

13 To save your changes, click **Save**.

NOTE

*After you have assigned Wireless APs to their home Summit WM Controllers, you must check **Active Wireless APs Report** screen to ensure that all those approved APs are indeed connected to their home Summit WM Controller. For more information, see "Viewing the active Wireless APs report" on page 93.*

Enabling availability pair, defining primary Summit WM Controller, and selecting security mode

Steps 4, 5 and 6 of the availability configuration process involve enabling availability pair, defining primary Summit WM Controller, and selecting security mode.

To enable the availability pair, define the primary Summit WM Controller, and select the security mode:

1 Login on both the Summit WM Controllers.

2 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP Registration** screen is displayed.

3 In the left pane, click **WAP Registration**. The **WAP Registration** screen is displayed.

4 In the **Registration mode** section, click **Paired**.

5 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

6 In the **Registration mode** section, click **Paired**.

7 From the main menu of the primary Summit WM Controller, click **Altitude APs**.

8 In the **Summit WM Controller IP Address** text box, type the IP address of the physical port of the secondary Summit WM Controller.

9 Select **Current Summit WM Controller is primary connection point**.

10 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP screen** is displayed.

11 In the **Summit WM Controller IP Address**, type the IP address of the management port or physical port of the primary Summit WM Controller.

12 Clear the **Current Summit WM Controller is primary connection point** checkbox.

13 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

14 In the **Security Mode**, select one of the security mode options. For more information, see page 90.

15 To save your changes in the primary Summit WM Controller, click **Save**.

16 Open the **Altitude AP Configuration** of the secondary Summit WM Controller.

17 In the **Security Mode**, select one of the security mode options. For more information, see page 90.

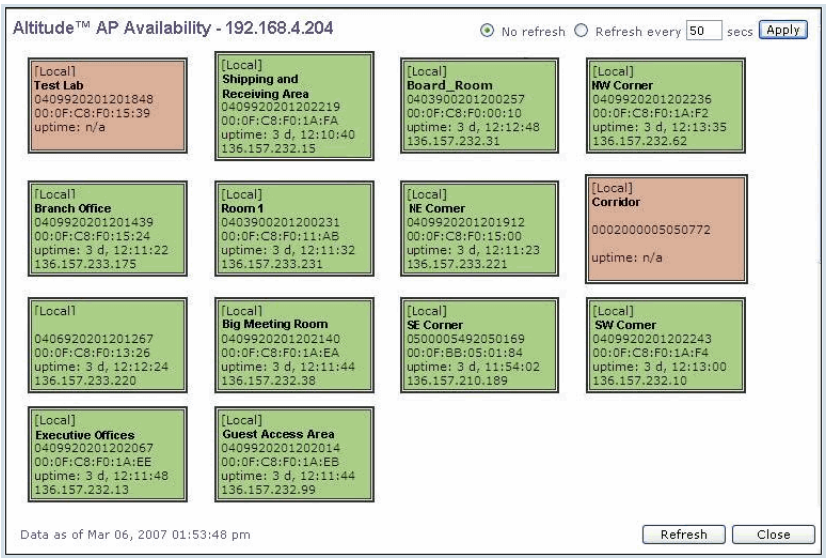
18 To save your changes in the secondary Summit WM Controller, click **Save**.

Viewing the Wireless AP availability display

The Wireless AP availability display provides the active connection state of an Wireless AP.

The display depicts the Wireless APs as color-coded boxes — Green and Red — on the screen:

- Green – The Wireless AP is configured on the Summit WM Controller and is currently connected.
- Red – The Wireless AP is configured on the Summit WM Controller but is currently not connected (not available to service this Summit WM Controller).



To view the Wireless AP availability display:

1 From the main menu, click **Reports & Display**. The **Reports & Displays** screen is displayed.

2 In the **List of Displays**, click **Altitude AP Availability**. The **Altitude AP Availability Display** appears.

Viewing the active Wireless APs report

To view the active Wireless APs report:

1 From the main menu, click **Reports & Displays**. The **Reports & Display** screen is displayed.

2 In the **List of Displays**, click **Active Altitude APs**. The **Active Altitude APs** display appears.

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